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JUNE, 1953

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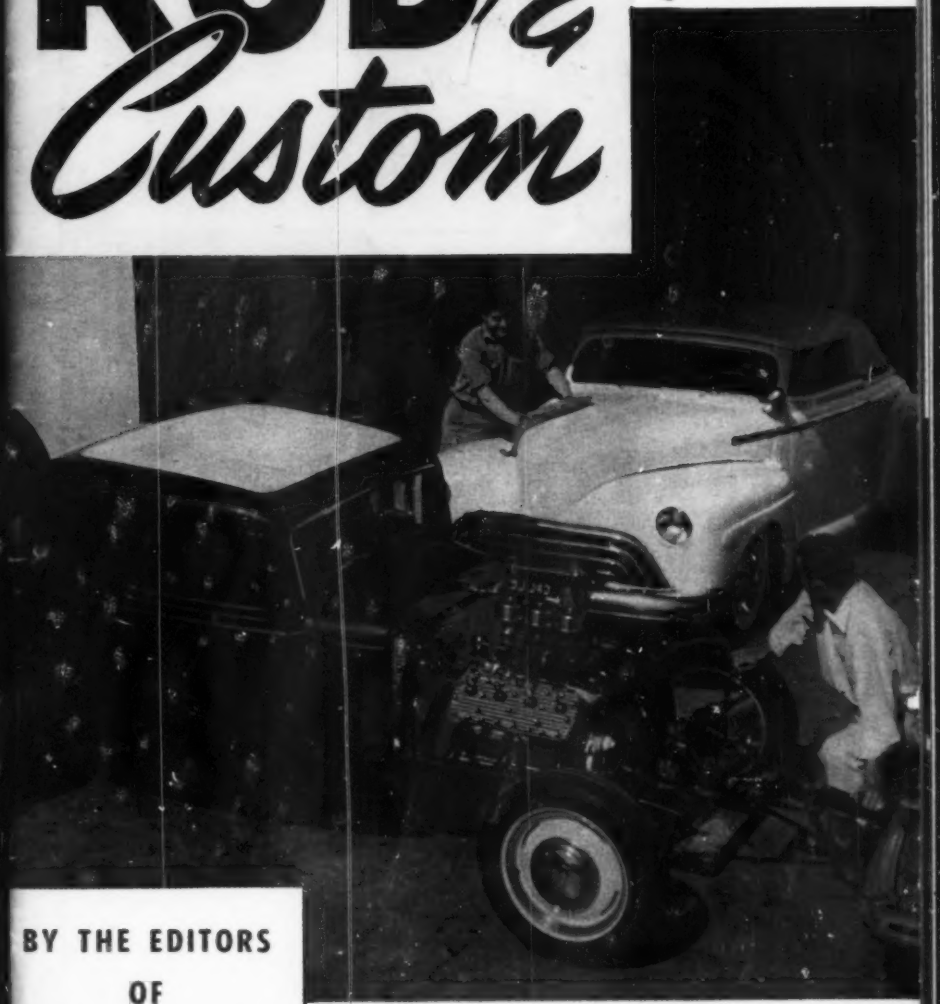

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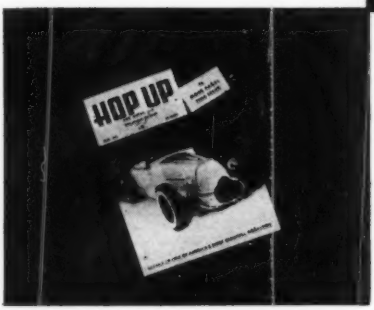


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ROD & Custom

Vol. 1, No. 2 — JUNE, 1953

- Publisher — W. S. Quinn
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- Photography — Ralph Poole

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Subscription price $3.00 throughout the world. Single copy 25c.

Change of address must show both old and new addresses.

Contributions — not responsible for the return of unsolicited manuscripts, photographs and/or drawings unless accompanied by a self-addressed stamped envelope.

Advertising: Advertising Manager — Jack Caldwell, 530 W. Colorado Blvd., Glendale 4, California. Midwestern Advertising — Wreadergast & Minahan, 160 North Michigan Avenue, Chicago 1, Illinois. United Kingdom — Kenneth Kirkman, 2 Longcroft Ave., Banstead, Surrey, England. Australia — William J. Palcanis, 211 Moorefields Road, Lakemba, Sydney, N. S. W., Australia.

# editorial . . .

RECENTLY WE received a letter from one of our readers, who was apparently in a state of despondency, in which he stated that he had been apprehended, and eventually cited, for driving at a rate of 37 miles an hour in a 25 mile zone. From all indications, the writer was highly annoyed, however he admitted he had been in the wrong. Without a doubt this was an infraction of the rules (he had definitely been speeding), but such a minor infraction that it most certainly should have been overlooked.

We considered all the plausible explanations; perhaps the "victim" was an habitual law breaker or, possibly, the law enforcement officer had a personal grudge against the defendant. Somehow, though, none of the particular situations seemed to fit the case so we thought we'd check into the matter further for our own personal satisfaction.

After a series of letters back and forth it finally turned out that the driver in question was the proud owner of a customized Mercury convertible. He had only recently completed the car and, from the pictures he sent us, it seemed to be a jewel in the truest sense of the word. It featured quite a few major body alterations and it fairly gleamed under its many coats of organic green lacquer. It was topped off with a white, padded top.

Further checking proved that the local constabulary had had no previous record of any sort on the offender and, further, that the letter writer had only recently moved to the particular town which eliminated the possibility of his personally knowing the officer.

The only remaining solution lay in the fact that the car was an attention-getter. Had the violator been driving a car of dubious vintage or if it had resembled any other of its thousands of brethren the violation would have, no doubt, been overlooked. In fact, the majority of the officers on patrol throughout the country daily overlook the fact that motorists commonly exceed the limit by at least five miles per hour.

Personal experience along these same lines has proven, to me anyway, this to be absolutely true. While driving through a large mid-western city last summer, in a chopped and channeled '40 Chevy, I was stopped by an ogle eyed minion of the law who, rather gruffly, ordered me to pull over to the curb. This came as quite a shock to me as I had been driving at least five or ten miles an hour *under* the speed limit in that particular location. I thought maybe my license plate had fallen off or, possibly, the officer wanted to buy the car. No such luck! He tried to nail me for speeding but, after a lengthy conversation, I was able to convince him of the fact that I had been doing nothing illegal. Unhappy at the prospect of losing a "sale" the officer told me, in no uncertain terms, that if I was seen in that city again I would promptly be "canned." Still not knowing just why, the officer went on to add that the car *looked like it was going too fast.*

In recapitulation it may be seen that anyone who drives a car of a one-of-a-kind-type must be unduly careful to obey every traffic law to the letter. It may also be assumed that traffic officers, being human, may have just the slightest tinge of jealousy.

It is certainly too bad that owners of altered cars have to be used as examples, but this is only one of the difficulties associated with owning a rod or a custom.

Photos by Poole

'32 Ford coupe has more wheels than it can use.

# Wheels A-plenty

DETROIT HAS been coming out with so many "new" innovations lately that it is all we can do to keep up with them. The latest of these "new" features is, of course, wire wheels. What will come out next remains to be seen. We wouldn't be surprised to see one of Detroit's "sporty" cars introduce the return of the rumble seat. Probably beating Detroit to the draw along these lines is this '32 Ford coupe that features side mounted wheels.

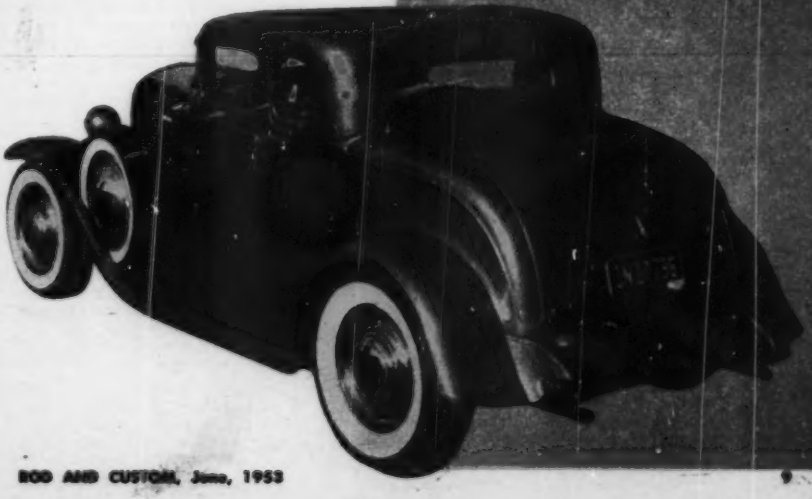
The installation of the side mounts came about quite by accident. When the California fender law was passed Lou Bingham was hard pressed to find something to cover his exposed wheels. Cycle type fenders didn't appeal to him so he, at last, dug up some original '32 sedan fenders. When he pulled them from the bottom of a scrap pile, Lou found that he had gotten ahold of a matched pair of front fenders with spare tire wells in them. He also uncovered the original braces for the fenders and the brackets necessary to mount them to the chassis. Further searching uncovered a pair of rear fenders, slightly "beat," and *one* running board. No amount of hunting could unearth another running board. At last, in desperation, Lou asked for one at a Ford agency, more as a joke than

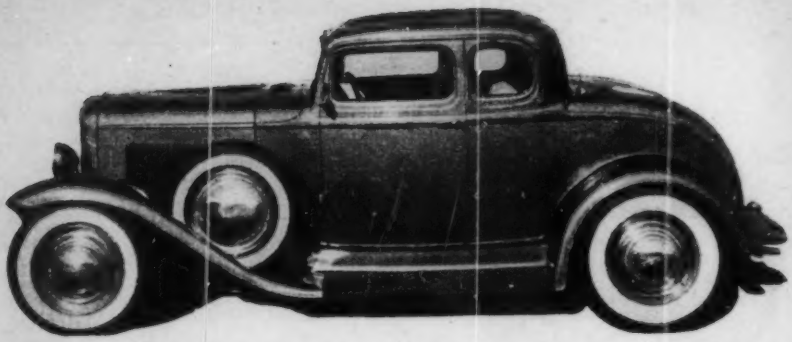
anything else. Imagine his surprise when the proprietor of the parts department calmly brought one forth with the original shipping tags hanging from it.

With the fenders and running boards installed Lou inserted a pair of 500 x 16 tires in the wells. The front tires on the car are 5.50 x 16 while the rear ones are 7.00 x 16 making the little coupe one of the few running *three* sizes of tires. When he stood back and looked at the car, Lou decided that the rear fenders should be "bobbed" to accen-

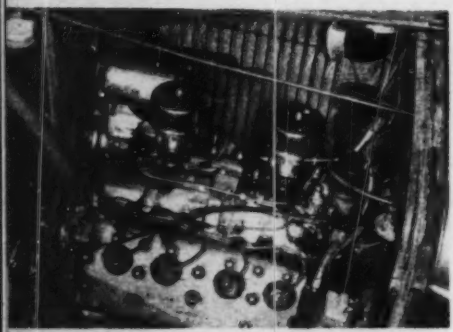
Full fendered, chopped '32 five window coupe with side mounted spares looks nearly stock.

Chop is more apparent in rear view from front. Rear fenders have been cut off flush with bottoms of frame horn covers and tank.





The metallic blue paint job was sprayed over carefully prepared metal. Restoration is good. New trend may be started by six white walls.



View of engine compartment shows headers and Navarro manifold. Note inside radiator cap.

Blue & white pleated leatherette interior harmonizes with exterior shade. Note early shift.

tuate the appearance of the white side walls.

Lou originally purchased his car about four years ago, right after someone had *tried* to chop the top. A good deal of work was necessary on Lou's part to correct the butchered job but he eventually succeeded in making it look right. To give the car a "dago" look, Lou installed a 3" dropped axle and this, together with the smaller front tires, gives the car a decided down hill look.

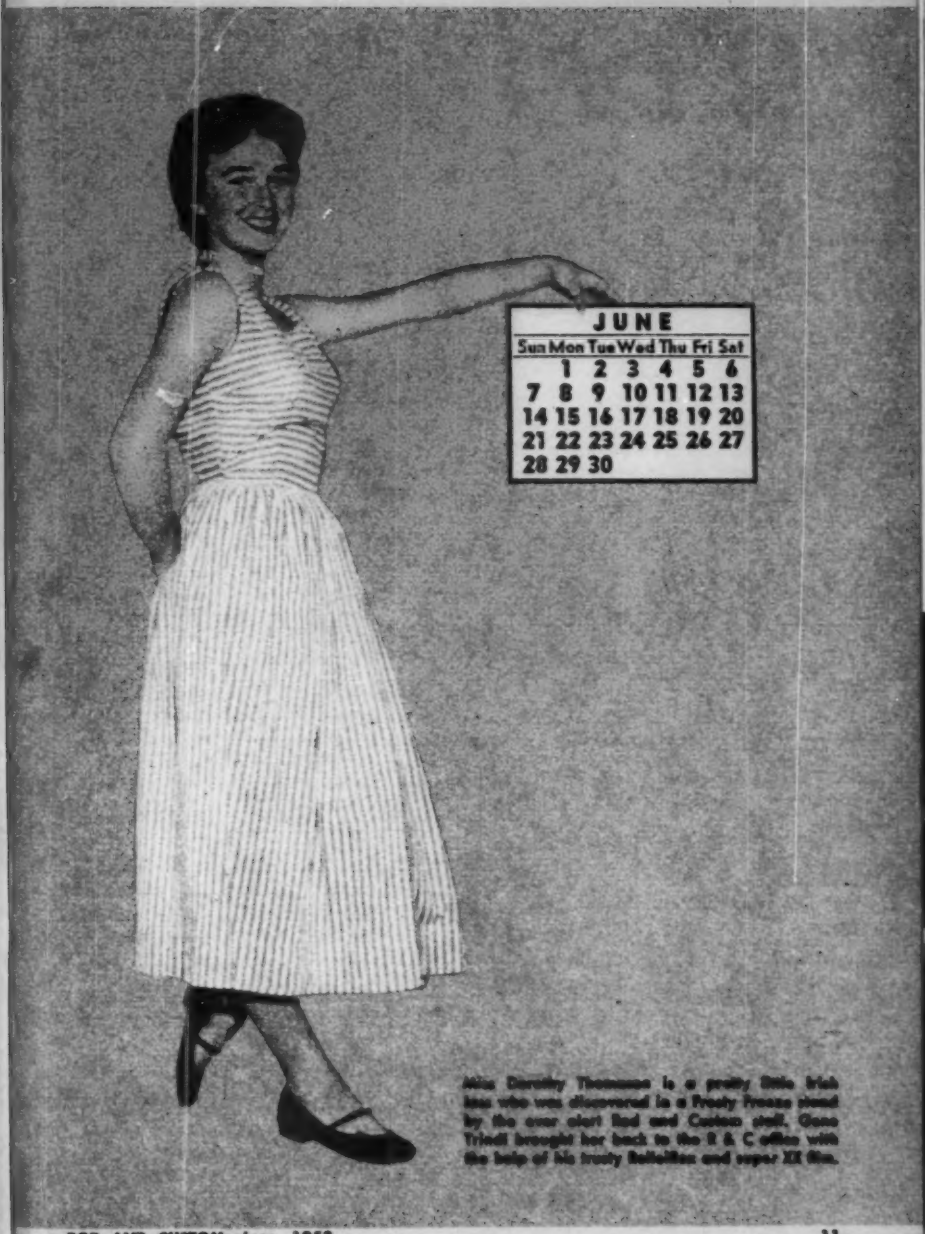
Being economy minded, he decided against a lot of chrome so he has painted the running gear and other odds and ends a bright red which contrasts nicely with the medium blue paint job on the body.

The interior upholstering was done by Montrose Trim Shop. It is pleated and rolled leatherette in harmonizing shades of light blue and antique white.

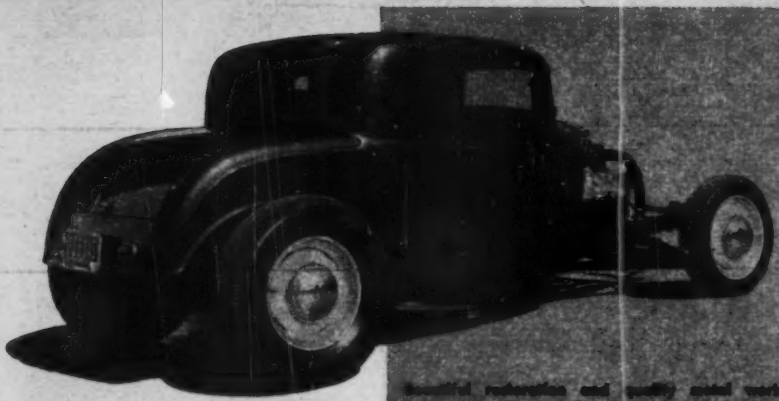
The instrument panel has a full complement of Stewart Warner instruments including amps gauge, fuel gauge, speedometer, temperature gauge and oil pressure gauge. A series of eight toggle switches in the center of the dash panel operate such electrical items as the radio, headlights, domelight, ignition and starter.

The engine has also received its share of reworking. The block is from a '36 Ford, an old "twenty one studder." It is bored .08 over stock which gives the engine an approximate displacement of 235 cubic inches. The manifold is by Navarro while Belond supplied the headers. The ¾ cam was ground by Clay Smith and the ignition is by Burke. The engine was built quite a few years ago and is considered small by today's standards but with the stock '32 transmission and the 3.78 rear end ratio the coupe has plenty of snap.

Another, bigger engine is in the works right now. Lou is the manager of an auto parts store that specializes in engine rebuilding so it won't be long until the little bomb has a bigger and better mill under its shiny bonnet.




Miss Dorothy Thompson is a pretty little Irish lass who was discovered in a frosty freeze stand by the ever alert Rod and Custom staff. Gene Trindl brought her back to the R & C office with the help of his trusty Rolleiflex and super XX film.



Used only for dragging, interior of coupe has been stripped and re-outfitted with only essential equipment. Notice safety belt on seat.

Transfer tubes for water are clearly shown in photo. Note cross pipe with water inlet cap.

beautiful restoration and quality metal work are result of carefully planned workmanship.

down hill, a dropped axle was obtained from Gene Winfield and installed.

Since the car is used only for runs over the quarter mile, the front brakes have been removed to decrease weight. This is, however, a poor idea for with the great speeds attained, the two rear wheel brakes are being overworked in order to bring the car to a safe stop. To replace the locking plates on the front wheels, large aluminum discs are used. Theoretically, this causes a loss of a drag since the air passing over them does not become turbulent due to rough surfaces.

The car was recently sold to Louis Thompson of Hughson who spends a great deal of his spare time keeping the coupe in tip top mechanical shape and who also keeps the metallic green paint as shiny as a new penny.

There are a surprising number of enthusiasts in the country who own restyled or otherwise revamped automobiles. In fact, there are generally several of them in each city and at least three in cases of our larger towns. It is unusual, though, to find two cars that are considered good enough to be accepted for a car show, such as the National Roadster Show, that both come from the same small town with a population of only 1000. Hughson, California, can claim this distinction, though, for, like the '32 coupe of Louis Thompson, the '47 Ford sedan this small town its home.

The white '47 Ford [illegible] belongs to Alvin Sorge of Hughson. Alvin is a member of the Century Toppers of Modesto. When he decided to restyle his car he naturally wanted the best of work so he let Gene Winfield, of Modesto, do the job.

The first item to be altered was the "high" windshield. A section four inches in height

# the CUSTOM . . .

was removed from the vertical posts thus reducing the windshield by that much. The door vents and the door window frames and glass had to be reduced by a similar amount.

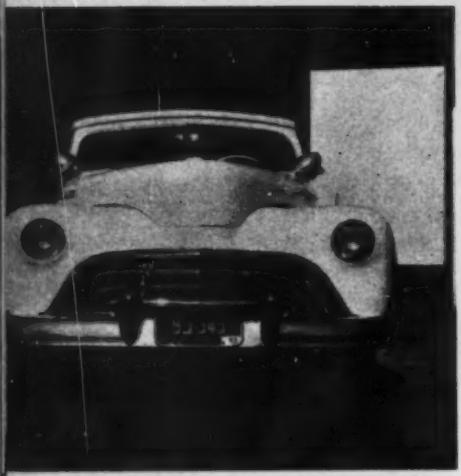
The entire Ford grille assembly was removed and the remaining opening was reworked so that an Oldsmobile grille could be installed. This meant constructing a filler panel above the grille to fill the opening between it and the hood. A gravel deflector had to be made and this was molded to the front fenders. Alvin thought that a '49 Mercury bumper, being heavier in appearance than the original Ford bumpers, would add to the new frontal appearance of the convertible. When Gene procured the bumper, though, he found that its installation would require a lot of thought. The bumper was first narrowed by several inches. Although it was now narrow enough, it still extended past the fenders too far so another two inches were removed and the front fenders undercut.

To complete the job, the car was given a rear-end lowering job and skirts and Cadillac type discs were added. The convertible was then painted an off white lacquer. The padded Carson-type top and the pleated and rolled upholstery were both done by Hall Upholstery Shop in Oakland.

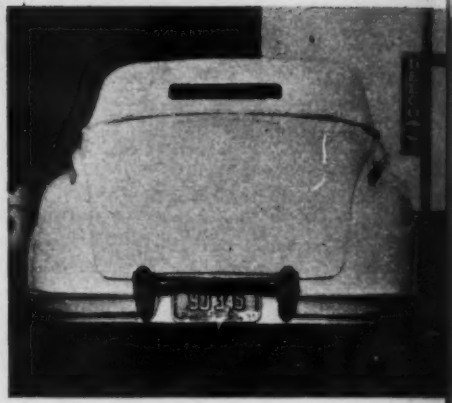
The "unnecessary" ornamentation on the hood was removed and the holes filled in. The wide strip down the center of the '47 hood was faired into the hood to give it the rounded appearance of the earlier '41 and '42 models. The chrome strip that runs along the side of the car has been shortened on the hood and the rear lower corners of the hood have been rounded.

The front fenders were originally built in two pieces and joined together forming a

Chopped top and lowering job greatly reduce overall height of otherwise high convertible.

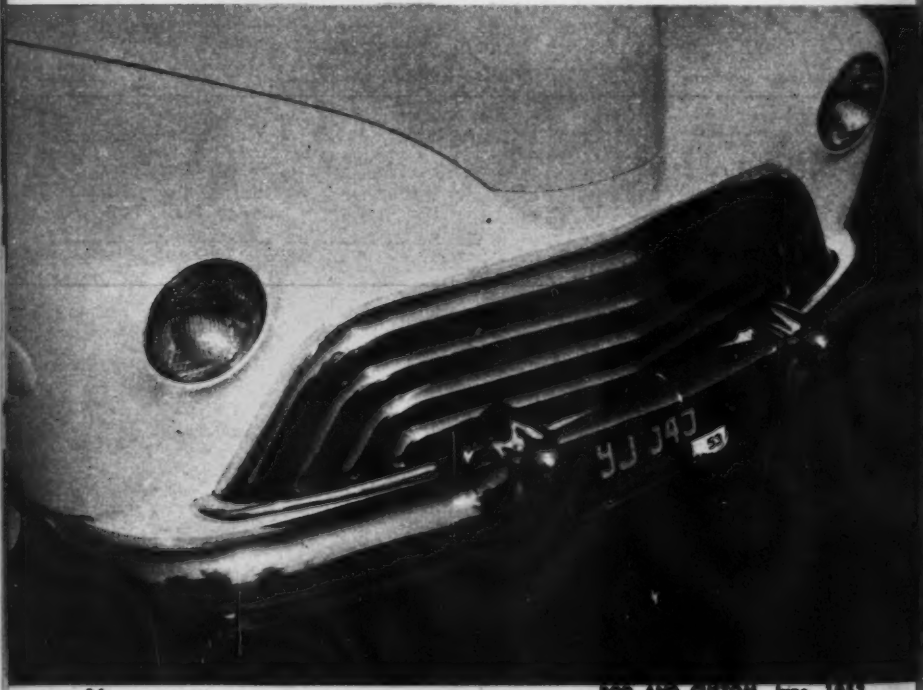


Heavy frontal appearance is achieved through the use of Olds grille and Merc bumper. Headlights are frenched and all seams are molded.



Convertible is painted white lacquer. Bumper is '49 Merc with taillights set into guards. Corners of deck lid have been rounded and the rear fenders have been molded onto the body.

Stock Mercury bumper was too wide for car so it was narrowed and the fenders were undercut.



seam along the top of the fender. Gone welded this seam shut and hammered it out so that no line appears there now. The headlights have been frenched and are now removable from under the fender.

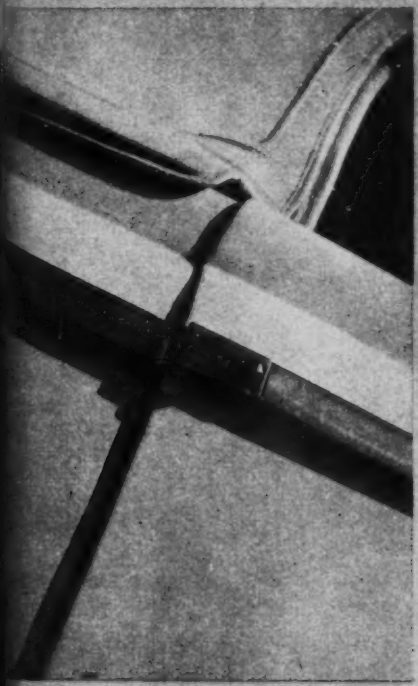
The door handles have been removed and they are now opened electrically, the buttons being set into the end of the chrome door molding. The buttons are of the locking type; the answer for those who may have wondered how electrically operated doors may be locked when away from the car.

The trunk handle and other hardware have been removed from the deck lid and the holes smoothed over. The four corners of the lid have been rounded to get away from the square corners usually associated with this model. This seems to be the latest customizing fad. It's not a bad idea but it is rather expensive for the small difference that it makes. Ordinarily it costs about fifteen dollars per corner for a job of this type.

The rear fenders have been molded to the body giving the rear of the Ford a solid, one piece look. The taillights have been taken from their normal position on the fenders and new lights were built into the '49 Mercury upright rear bumper guards. This is another good idea but the lights are in danger of being broken. The tips of the guards were cut off and red lenses clearance lights were fit into the openings.

The engine, too, has received a thorough going over. The block is a '49 Mercury with a dual Offenhauser manifold. It has been ported and relieved and the heads have been milled. It also has a W & H ignition.

Handles are removed, holes covered by molding. Doors are actuated by a key locked pushbutton.



Taillights have been set into bumper guards. This is a good idea and looks good but lights are in danger of being broken by following car.

# THE FIRST JET Car!

By Spencer Murray
Photos by Acme and Los Angeles Daily News

The famous dry lake beds in Southern California have seen, in past years, all manners of cars propelled by a variety of means, but the car that rumbled across Rosamond dry lake on the night of January 4th, 1947, was one that will surely find a place in the history books of the future. Through the kind permission of the Los Angeles Daily News we are reprinting the following news item:

"Saturday, January 4th, 1947. The first jet propelled auto to be developed in this free-wheeling age was given its trial run on the flat bed of Rosamond Dry Lake near Muroc.

Actually, it is little more than a stove pipe on wheels, but its five builders think it points definitely of things to come in the automobile and marine field.

Speed of the galloping stove pipe is one large question mark. Conceivably it could reach 500 miles an hour—if a chassis could be built that wouldn't disintegrate under such speed.

Also, there is a little problem of keeping it on the ground at that speed. The darn thing might just take off like a rocket.

In its preliminary spin, Bob Yeakel, one of its designers, kept the jet buggy well under wraps.

Once the chocks were removed from under its wheels, the fuming chassis rolled over the course at 35 mph without advancing the throttle one little bit.

'All we tried to establish was if the thing would run,' said Yeakel. 'We'll not try to exceed 200 mph with the experimental job we have now.

'For higher speeds, we'll need a longer

**Looking like a roadable flying saucer with outer skin removed and piloted by an asbestos-clad Martian, jet-powered "rail job" speeds across California dry lake in the dead of night. Roar of jet blast was deafening and flickering bluish flame extended six feet behind exhaust tube. Experimental run was made six years ago. Photograph was taken from the author's convertible during second of the jet car's two runs on January 4th, '47.**

wheelbase, a rudder control, racing tires and elevator trim tabs to keep the thing from flying.

'Then we can really open it up.'

Power unit is a simple 15 foot tube with only two moving parts. These are in the intake valve at the head. Propane gas is fed into the tube until the tube is well warmed, then propane fuel is used.

The tube slowly turned a cherry red, and spewed a bluish flame into the cold night air. In fact, the tube grew so hot that Yeakel, the test driver, was slightly burned despite the fact he wore a fifteen pound asbestos suit.

Thrust developed by the unit is about 250 pounds. An automobile develops only fifteen pounds thrust at a speed of 100 mph, so theoretically the buggy can generate about 500 horsepower in its present form.

Simplicity of the jet engine particularly intrigues the builders of the car — Yeakel, Gale Kelly, Bob Spaid, Jim Vickers and Paul Bennett, all from the Los Angeles area.

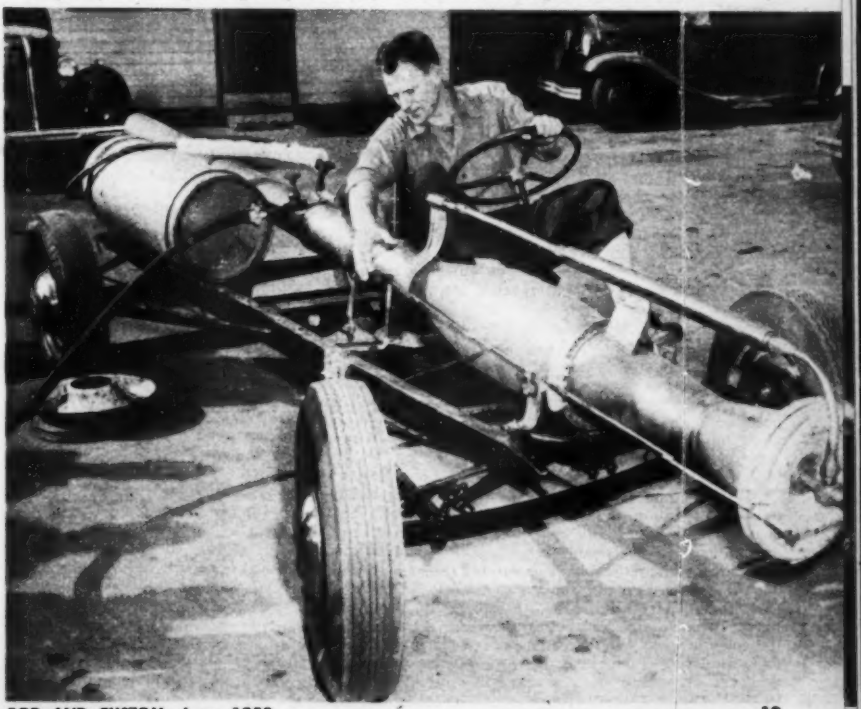
Yeakel, Spaid, Vickers and Bennett were in the same Navy corps outfit during the war, and the latter three have been tinkering with automobiles since they were old enough to let air out of tires.

Yeakel believes the engine has a greater potential use in boats than automobiles.

At present, fuel consumption is high, but propane gas costs only 3.5 cents a gallon, if used in marine engines. If used on the highway, taxes boost the cost to 14 cents."

A few months ago there appeared in newspapers across the country a story concerning

**Jet unit is fifteen feet long. Note that seat is placed over left frame rail to prevent operator from being burned. This did not help.**



a jet propelled car being constructed for Ab Jenkins of Salt Lake City, Utah. Upon completion of the car and after its preliminary test runs, Mr. Jenkins hopes to surpass the existing land speed record of slightly over 394 mph. However, if he does his speed will not be officially recognized by the AAA since their rules stipulate that the records apply only to internal combustion reciprocating engine powered vehicles driving through their wheels. The jet car does not qualify under these regulations.

One of the articles even went so far as to state that this car would qualify as being the *first* jet propelled automobile in the world. We know, however, that this is far from the truth. The article reprinted above answers that. There is a story behind the story, though, and it goes something like this:

We originally came across this unusual automobile quite by accident. It was an exceptionally warm day for that time of year, even for Southern California. We had removed the Carson top from our '41 Chevy convertible and were driving around enjoying the sunshine. We happened to notice a car pulling what we thought was a rather unusual looking four wheel trailer. Closer inspection showed, though, that what we were staring at was no trailer. It was an automobile! Being curious when it comes to things automotive we followed the caravan that accompanied the car until they stopped for gasoline at a station that marks the beginning of a mountainous road leading to the dry lake country.

Questioning one of the members of the party we were able to discover that the car was being taken to a spot where it could be given its first actual test run. We could not determine the whereabouts of the proposed testing location so we took it upon ourselves to trail the caravan until it reached its destination.

Several hours later the group of cars turned off the main highway and bumped across a secondary road that seemingly led nowhere. Within a few miles, the lead car turned once again and began following nothing more than faint wagon tracks. Another mile or so of this and the caravan pulled to a stop at the southern end of a large, dry prehistoric lake bed.

Several other curious onlookers had attempted to follow the weird looking vehicle as it was towed to this desert location, but they had turned back one by one as the distance from their homes became too great. Therefore, we were the only ones outside of the official party that stood there on that barren windswept desert wasteland waiting for something to happen. Since our curiosity had brought us so far, the group finally accepted us as one of them and we were let in on the whole secret.

The car turned out to be an experimental, jet propelled bodyless car. One of the builders, Bob Yeakel, had towed the machine behind his own car and he, in turn, had been followed by a pick up truck that carried a large supply of tools and a drum of fuel. Making up the rest of the party were the other four co-designers of the car and several members of the press, one of their cars being a newsreel truck whose crew had been assigned to cover the project.

By the time all was in readiness it had grown quite late in the day and before the car made its first run, the camera truck had to turn back toward Los Angeles since nighttime movie photography required a good deal more equipment than they carried. Several other members of the party had also returned home so when the engine was finally started, after a great amount of trouble and time-consuming preparedness, there remained only twelve or fourteen people to witness the historic event.

With an earsplitting blast that echoed for miles across the desert, a tongue of flame licked out for fifteen or twenty feet behind the car. The blast changed to a steady roar and the tailpipe of the engine began to glow from the tremendous heat generated. Clad in an asbestos suit, co-designer Yeakel climbed aboard the pulsating monster and gradually rolled off into the distance. Before the car had gone any great distance the engine suddenly stopped, the roar continued to echo from the mountains for an instant then ceased altogether, and all that could be seen was the distant glow of the red hot jet tube. The sudden stop was not pre-arranged so, as the observers stood still wondering what to do, we jumped into our Chevy and took off in the direction of the jet car.

Our headlights soon picked out Bob Yeakel, still in his white fire resistant suit, standing near the car rubbing his legs. Even with the protective suit covering him, Bob's legs had been burned by the heat.

We pushed the hapless driver and his car back to the waiting group of people and talk immediately began as to whether to abandon the project or to make another run. Although it was now quite late at night, it was decided that one more run would be attempted and an approximation of the speed made.

Since our topless car made an ideal vantage point from which to protograph the car while in motion, one of the news photographers climbed aboard and directed us to stay abreast of the car during the run and to keep a close watch on the speedometer.

It should be emphasized here that no trials for top speed were attempted. The car and engine were entirely experimental and for high speed runs another vehicle was to be constructed.

The same blasting sound soon roared out and we all put our fingers in our ears to ease the pain. Yeakel again got on the car, this time sitting "side saddle" to keep his legs as far as possible from the engine. He indicated that the throttle was to be opened only enough to keep the car in motion. The necessary thrust to overcome inertia was reached at approximately one eighth of full throttle. Slowly, the car rolled off and we took up our station twenty feet off to the left. Nervously adjusting his camera, the photographer mumbled something about hoping the car wouldn't explode, and stood up in the rear seat. Lighting the way for Bob with our headlights, we stayed the required distance away from him and drove along for perhaps two miles. Soon after the car had gotten under way it reached a speed of 35 mph and did not go any faster. Bob waved to us several times indicating that all was well and the car was, apparently, a success. Soon we began to run out of lake bed so Bob shut off the engine and braked the car to a stop.

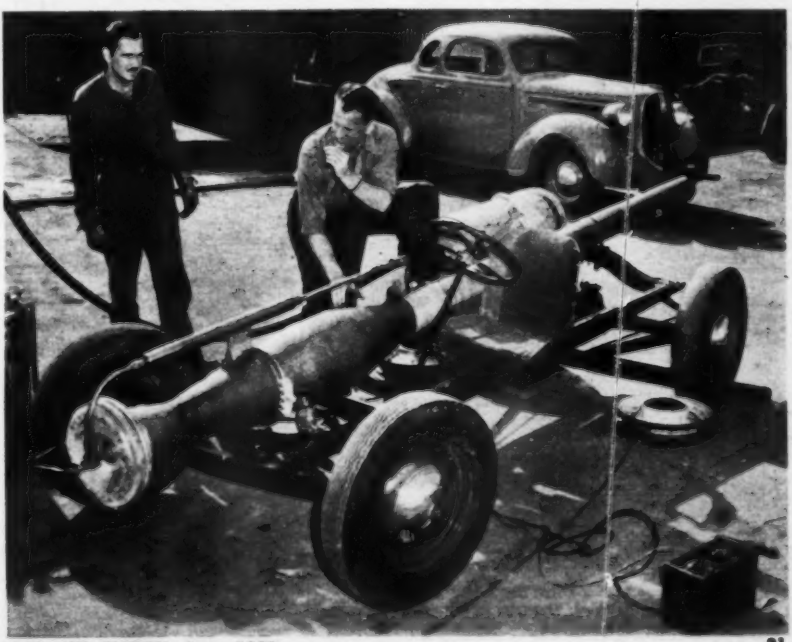
Bob, happy as a child with a new toy, told us in detail how the car had behaved. Then, knowing that the group were waiting nervously at the other end of the dry lake for some word, Bob asked for a push back.

We eventually arrived home around two in the morning and gratefully crawled into the warmth of a bed. Without the top on the Chevy and with the below freezing temperatures of the desert night, we had become thoroughly numbed.

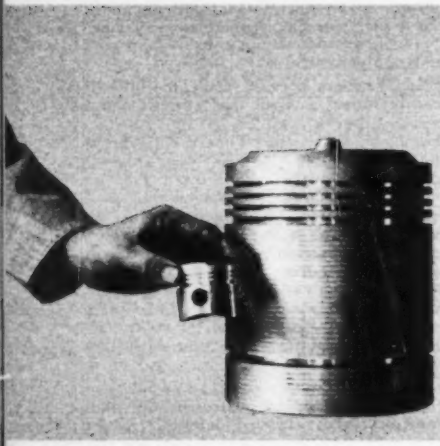
Bob Yeakel told us by phone, the following morning, that another trial run was to be made, earlier in the day, for the benefit of the newsreel company. When the day for the run arrived we had had no word from Bob so we decided that the project had been called off temporarily for one reason or another. Eventually, we found that the War Department had seen the news releases and had sent representatives out to Bob's house to look the car over. One look was all they needed and the car was taken by them to a distant jet lab where the home built engine was tested and disassembled for study. Nine months later the car was returned without comment and nothing has been said by the War Department since.

The article that appeared in the Daily News over six years ago inferred that another model was to be constructed and that someday it would roll across the dry lakes or salt flats at fabulous speeds.

*(Continued on Page 66)*



Chassis of car is from '36 Ford. Only alteration was split wishbones and solid rear end.



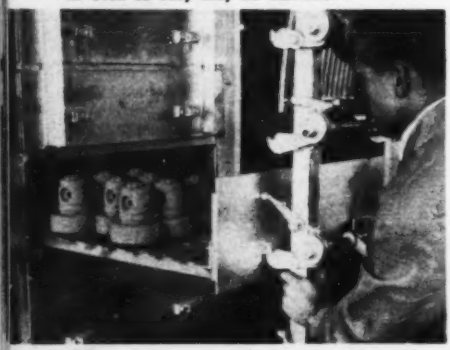
# This is how it's done...

Photos by Poole and Howlett

***Special racing pistons are made in an up to date plant.***

The sand cores are made at this bench. Necessary equipment includes core box, sand and tamper. Finished core at right.

Sand cores containing oil and water are baked in oven so they may be handled.



Last month in this column we asked whether you had ever wondered what part of your car was more important than another. Naturally, there are many parts that are highly important and without which an engine would not run.

Take pistons for example. Without them an engine would be incapable of running because, basically, it is through them that power is transmitted to the connecting rods and thence to the crankshaft. Surprisingly enough, there are a large number of people who have never actually seen a piston. Of those that have seen an engine torn down there are, undoubtedly, a large number of them who haven't the slightest idea of how a piston is manufactured. Are you one of these unfortunates? If you are, let's go down to the Speed-O-motive Company and see just what all goes into the manufacture of a piston, particularly a custom made racing piston.

Mr. Bob Garrett, chief engineer for Speed-O-motive, greets us at the door of the plant and, after we let our wants be known, he leads us off on a tour of the plant explaining the various operations as we go.

To begin with, there are four steps into which the manufacture of a piston can be divided. These are: Engineering, Casting, Heat-treating and Machining.

Of prime importance is the engineering of a future design. This is handled by Bob Garrett himself, he being a graduate automotive engineer with a good many years of racing experience thrown in for good measure. This step requires long hours at the drawing table and countless trips to the

foundry to check on possible shapes and sizes of pistons to come.

A piston just isn't designed without a specific need in mind. In the field of designing and manufacturing special racing pistons many things have to be considered, such as; amount of compression, length of stroke, and number of revolutions per minute of the engine for which the pistons are being fabricated. By way of example, let's say that a customer has ordered a special set of pistons to be used in a new Buick V8 engine that has been set up for straightaway high speed runs.

After the engineering of the piston is completed the blueprints are given over to a pattern maker who goes to work making wooden patterns for the pistons. Because the outside of a cast piston is machined many times before it is put into actual operation, it is the inside of the piston-to-be that requires the most care because it dictates the shape of the finished product.

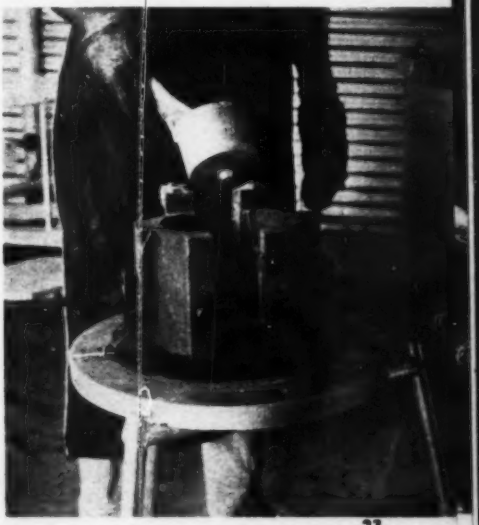
The pattern maker laboriously carves, in a block of heavy wood, an exact duplication of the inside of the future piston. Upon completion of the wooden replica, it is cut in half and checked and re-checked many times to insure perfection. The halves are then with alignment pins and holes so that the halves may be joined once again in perfect alignment. The two halves of the pattern are locked together and a specially compounded casting sand is poured into the mold and tamped down with a wooden mallet or poker. The halves of the mold are separated and inside is a reverse replica, in sand, of the interior of the piston-to-be. In other words, the sand occupies the space in the piston that the metal won't. The wooden mold is filled and re-filled many times until as many cores are made as there are to be pistons. The cores of sand are carefully placed in a bake oven and "cooked" at varying temperatures until, after from six to eight hours, they have become stable enough to allow handling and are removed from the oven and allowed to cool.

Because Speed-O-motive has been manufacturing pistons for some time and because they have a large number of piston molds they bought from other companies, they have a good supply of outer shells. One is selected that conforms closely to the necessary size for the theoretical Buick V8 pistons. Oversize is not too important at this early stage because all the excess stock is taken off during the subsequent machining operations.

Continuing with our exemplified project, let's say that the selected outer shell and the sand core are being set up for the casting process. The core is carefully set on a heavy steel plate and the outer shell is placed around it. An opening for the molten metal

Molten aluminum is taken from furnace with dipper and poured into the mold.

Worker removes hot casting from permanent mold. This type does not use sand since the core is made of steel.



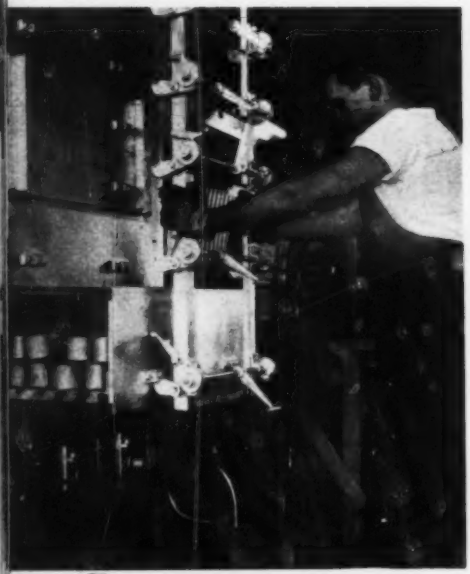
Stacks of piston castings are between furnaces, left, and bake oven, right.

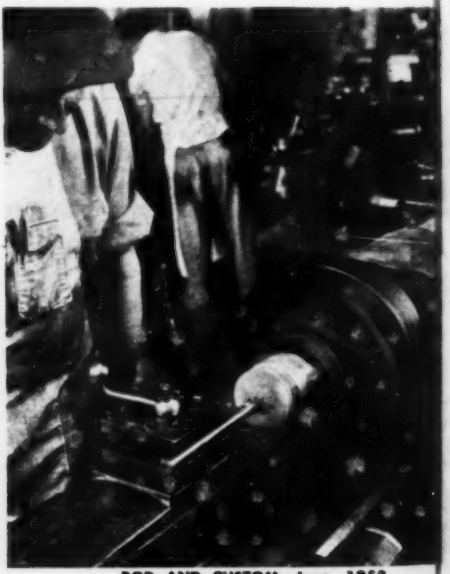
Worker puts castings into heat-treating oven. Pistons will remain at high temperature for several hours at a time.

is provided at the top of the core and through this the aluminum is poured, it being semi-fluid with a temperature of approximately 1400 degrees Fahrenheit. This is done by a man who, suitably garbed in the protective clothes of his trade, ladels the molten aluminum out of the furnace with a dipper and pours it into the opening. Since the aluminum enters the mold at one side several attempts are necessary so that the mold will become sufficiently hot to allow the metal to flow into all the spaces without first solidifying. Each time a pour is made, a helper breaks open the mold and removes the piston, or a part of it. Eventually, the mold reaches a high enough temperature so that the metal remains semi-fluid until the entire cavity has been filled. Then the actual run begins.

Approximately thirty seconds are required for casting to cool enough so that it will retain its shape when removed. The helper breaks open the mold, picks up the casting with a pair of pliers (it still having a very high temperature) and knocks the sand out of it. The casting is then simply tossed to the floor and allowed to cool.

Since this method necessitates the use of a new sand core each time a casting is made, it can be seen that for high production of a popular piston type (such as racing, or factory replacement, pistons for Fords, Mercurys





Nearing completion, a piston is being machined in the special piston lathe.

and Chevrolets) this method is inadequate and overly expensive. The sand core type of casting is known as the semi-permanent type of mold. The method for high production employs what is known as the permanent type of mold.

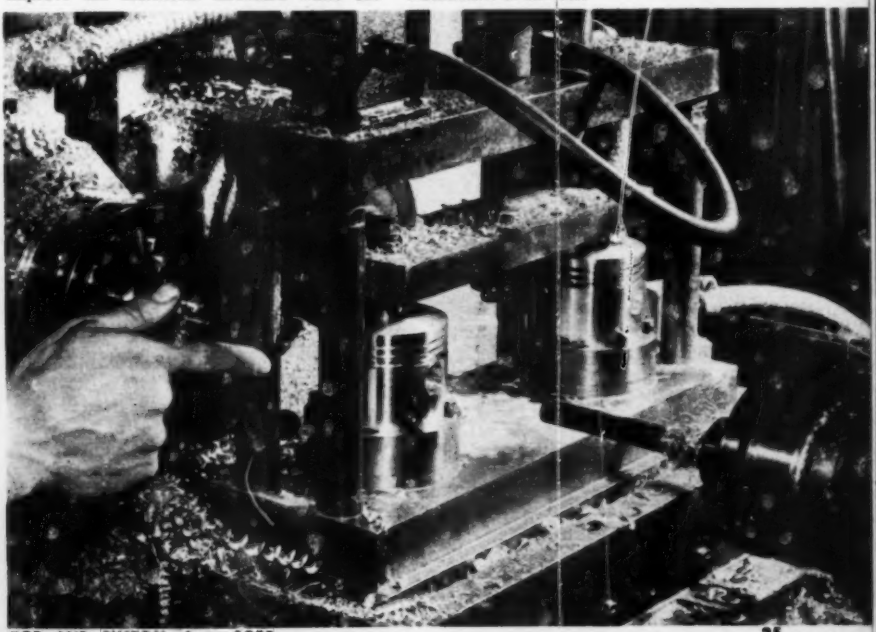
This method differs from the first only in that the center core is made of steel instead of sand. Much closer tolerances can be held with the steel core because the inner and outer molds can be positively locked together. Because the interior of a piston is designed so that the mold forming the inner cavity cannot be withdrawn in one piece, it is necessary to use a core that is made in at least three pieces as can be seen in the accompanying photographs. The inner section of the core is removed first then the outer pieces may be moved toward the center of the opening and then withdrawn.

The next major step in the manufacture of a piston is heat-treating. This is absolutely necessary if the aluminum casting is to reach its maximum strength. When the casting comes out of the mold there are stresses in its molecular structure that tend to weaken the casting and induce warpage when the piston becomes heated through use. The finest of the aluminum pistons are actually heat-treated twice. The first treatment serves to improve the molecular structure while the second treatment removes the casting stresses. Heat-treating does much to add to the cost of a quality piston and for this reason many of the mass-produced factory type pistons are not heat-treated. These non heat-treated pistons are used in some passenger automobiles, it not being expected that they will receive anywhere near the treatment such as given a racing car piston.

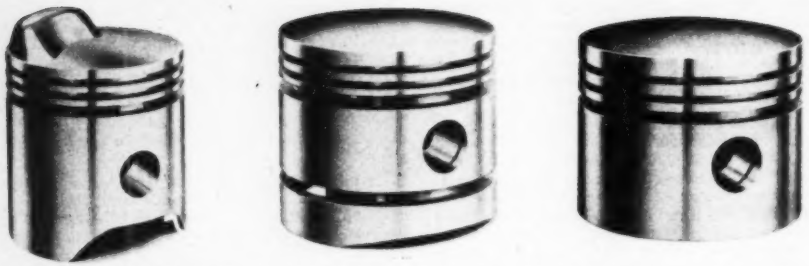
Pistons that are not heat treated are weaker and so must be fitted, comparatively speaking, loosely into an engine. This so-called looseness is to allow for expansion due to warping.

Heat-treating is done by placing the rough castings into a giant baking oven in which the necessary temperature is maintained for a certain length of time, usually several hours. For the second heat treatment the castings are left in the same oven and the temperature merely reduced by a hundred degrees or so and held there for another extended period. They are then removed and allowed to cool of their own accord. When cold enough to handle they are ready for the first of the various machining operations.

Utmost precision is required in machining



**Engineer points out how the wrist pin holes are bored. Allowable tolerance is only one ten thousandths of an inch.**



Shown above are three different types of pistons. First one is a high dome piston used in cars with overhead valves. The high dome extends into combustion chamber raising compression. Second is a typical replacement type piston. Four grooves are for rings. Third piston has only three ring grooves, is used only for racing. These are just a few of the many pistons that are available.

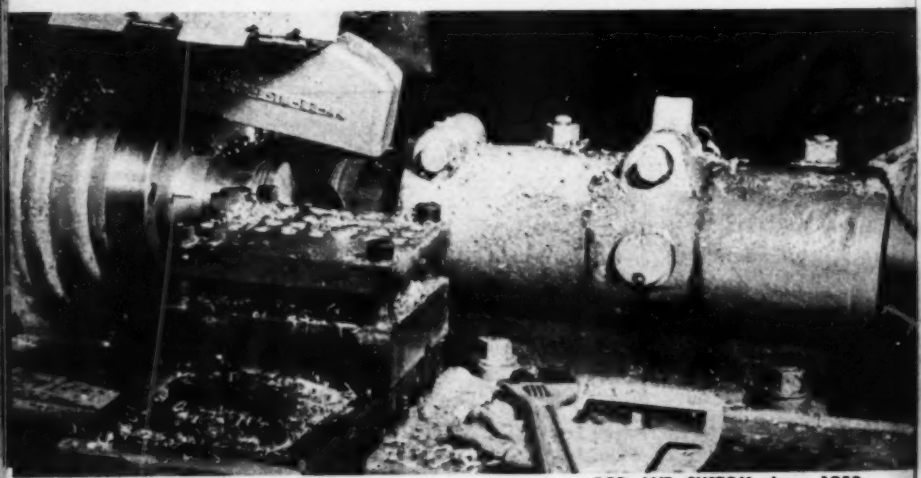
pistons because piston performance depends on close and accurate fits in the engine. Most machining operations require specially designed piston-making machinery, therefore, there are relatively few piston plants in the world.

The first machining step is to mill the bottom of the piston so that it will sit absolutely flat for the subsequent operations. The interior of the piston, at this stage, is the most important so the piston is set up in a lathe chuck that holds it by the inside. Being thus centered, the outer surface is turned down so that the thickness of the wall of the piston is the same at all points for all practical purposes.

The next operation is the machining of the outer surface of the piston, once again, this time with greater accuracy. Since quality pistons are not perfectly round but elliptical (to allow for expansion without the piston becoming too tight in the cylinder due to high operating temperatures) this operation finishes the pistons off to their *maximum* outer measurement. The ring grooves are also cut during this step and the top of the piston is faced off to the desired shape.

The pistons are next set up in an Ex-cello boring machine that drills the wrist pin holes then finish bores them to an accuracy of one ten thousandths of an inch. This giant machine is somewhat similar to the pin-fitting machine in many parts stores, the only difference being in its larger size, its greater accuracy and its over $12,000 cost.

Pistons are cam ground to an elliptical shape in this expensive piston machine.



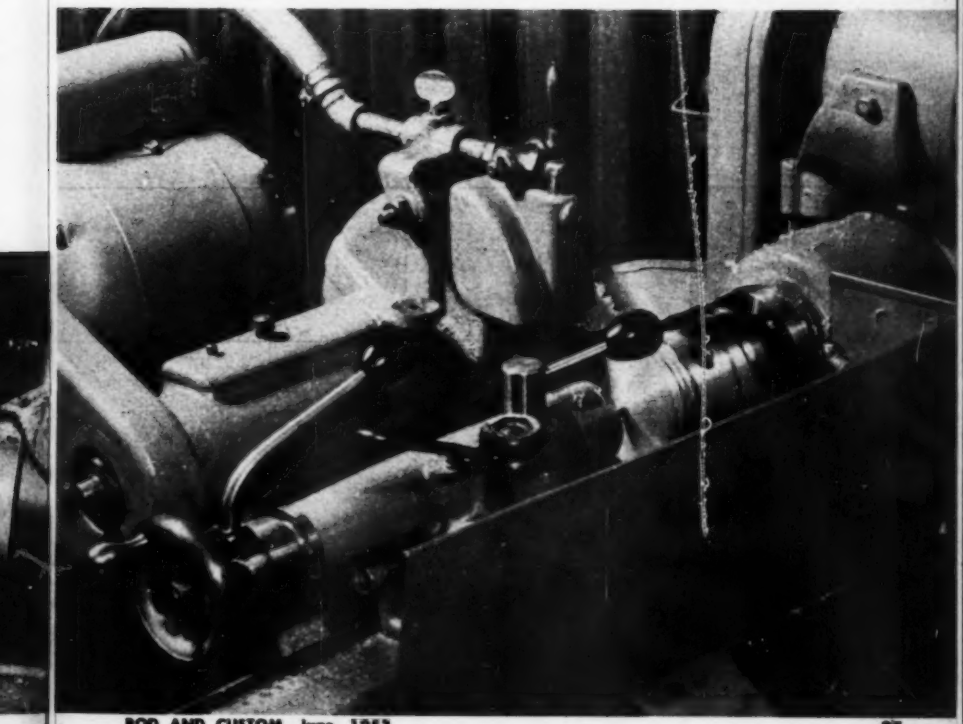
The final operation is done on the outer wall of the piston once again. This is the elliptical grinding of the piston and is the step that is the most important to the customer. This step is the one that determines whether the piston will accurately in a particular engine. In a previous step, we have seen the outside diameter of a piston turned to its larger diameter. Now, the smaller diameter has to be ground into the piston on opposite sides so that it will form an ellipse. Actually, this elliptical shape cannot be seen by the naked eye for the difference is only six thousands of an inch but your engine would know the difference!

The piston is set into a machine resembling a lathe that spins the piston at a constant rate of speed. In the position normally occupied on a lathe by a cutting tool there is a revolving grinding wheel that can be moved in so that it contacts the revolving piston. The grinding wheel itself is actuated by a revolving cam shaft so that it moves regularly in and out, the limit of travel being about six thousands of an inch. As the piston revolves, the rotating grinding wheel moves in and out to a regular rhythm, its cycle taking place twice to each single cycle of the piston. This unusual movement causes the piston to be ground irregularly to a predetermined shape. When the piston is removed from the machine it is, for all practical purposes, completed and is ready for packaging and delivery to the customer.

The work that goes into the manufacture of a piston cannot be appreciated until it has been installed in an engine and the engine is started up and subsequently run. Not until then can it be determined whether or not the manufacturer knows his business as thoroughly as he should.

Completely amazed at the series of operations that serve to make up the complete fabrication of a piston, we thanked Bob Garret for his time and trouble and turned our way homeward wondering just which of the many available types of Speed-O-motive pistons would work best in our own car.

**Special Sunstrand piston lathe is being used to cut ring grooves and face top.**



16 year old Sally Weiper of Monrovia, Cal., was stopped by cameraman Gene Trindle at Balboa, Cal., for lucky readers of R & C.

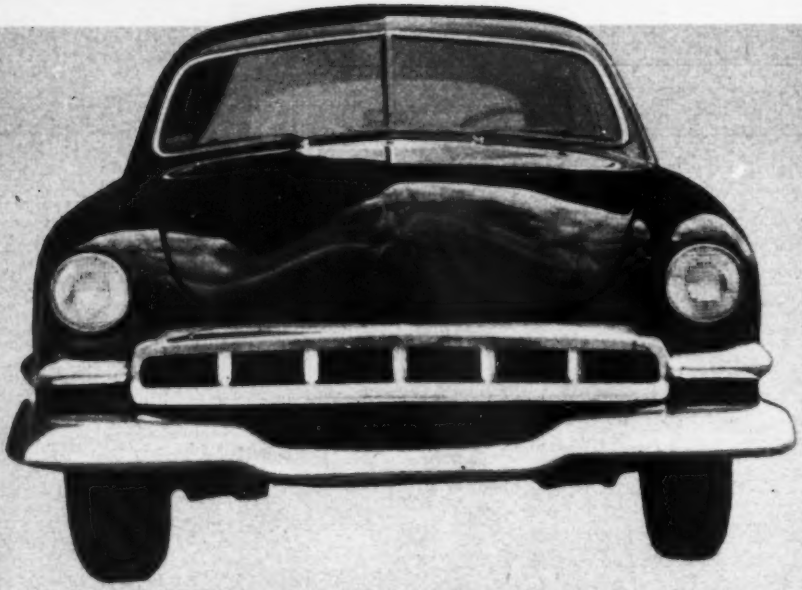
# OHIO Custom

**Photos and Story**
**by William Kiffin**

IN KEEPING with the trend of past issues of Hop Up, which have shown several sectioned Fords, here is a challenging contender from the Midwest. The car belongs to Bob Pieper of Cincinnati, Ohio, who wanted to give his car a slight change and ended up with a $4000 major conservative custom.

The '51 Ford was purchased new in late '50. After Bob had owned the car for a year, he decided that a few changes could be made to bring his car up to date with the newer models. He proceeded to dechrome the hood and deck, french the headlights, and install a Meteor (Canadian Ford) grill. (Hop Up Readers Customs, June '52.) To finish off this customizing, he painted the car metallic maroon and installed a full race engine.

Two months after this customizing was finished, the car was accidentally sprayed with acid. This accident led Bob to change the car even more to make it a major conservative custom. He took out a four inch piece of metal right at the chrome strip. The stock '51



Side view of car shows silhouette without dragging the ground as some other customs do.

Canadian Meteor grille and Lincoln bumper help make the front different and outstanding.

Rear view of sectioned Ford shows frenched Rambler tail lights and shortened deck lid. Bumper guards are '47 Studebaker mounted upside down with protruding exhaust pipes.

Ford strip was removed and a '51 Pontiac rub strip installed. This strip also conceals the push button for the doors. In the front of the car, Bob reworked the grill area to carry the Meteor grill and rounded the hood corners.

The '53 Lincoln bumper, which was sectioned five and one-half inches on each side to conform to body size, besides being a bumper, acts as an air scoop for the front end. This helps cooling problems in a car that has a partially closed grill area. Moving around to the side of the car, Bob removed the drain molding and rounded the door corners. To give the car a continental look, he installed snap-on wire wheels.

In the rear of the car, the tail-light moldings and the stock '51 Ford tail-lights were removed in favor of a frenched-in '51 Rambler tail-light. The rear gravel pan was then molded to the body, the rear fenders leaded in, and the trunk lid corners rounded. The rear bumper is stock '51 Ford.

An unusual feature of the car, and an original one, is the combination bumper guard and exhaust opening. Bob took '47 Studebaker guards and turned them upside down; then using the tops of '42 Ford bumper guards, he brazed them to the bottom of the Studebaker guards. He then ground out a portion of the Studebaker guard and welded an echo can behind this to form the exhaust opening. Lowering of the chassis was accomplished by two and one-half inch lowering blocks in the rear springs. This gives the car a pleasing look, but does not lower the car till it drags the ground. The engine is a full race Weiand equipped '51 Ford. Twin pipes and mufflers are by Porter.

To complete the exterior job, fifteen coats of metallic maroon were sprayed on the car. The Ford was then turned over to Hank's Custom Upholstering where Hank did the very beautiful upholstering job in grey and yellow, pleated and rolled, elastic naugyhide. The seats were sectioned two and one-fourth inches, and the seat adjustment still works. The floor mats are grey carpeting dyed black and trimmed with grey naugyhide.

Bob has installed an extra instrument panel over the drive shaft tunnel. The panel contains a Stewart Warner Tachometer, two water temperature gauges, a Mile-O-Meter, and an oil gauge. He also installed a safety device which warns that the electric power to the push-buttons is on or off, by means of a small light on the panel. If the car is in motion and the light is on, that means there is danger of the door opening if the button is touched. A toggle switch controls the electric power. All of the garnish moldings on the interior were chromed. Last but not least, Bob installed a second radio speaker on the back shelf.

# Technical Tips

### CHEVY-OLDS CONVERSION

Could you give me any information on the installation of a 1950 Oldsmobile Rocket engine in my 1950 Chevrolet? Would I have to change transmissions or rear end gears?
Vernon O'Brien — Muscatine, Iowa

*• Your question is one that has been asked by many but actually done by few. The conversion is quite possible and can be done providing you have access to a fully equipped shop. The engine itself will fit into the engine compartment of your Chevrolet, with minor alterations to the inner fender panels, but a new front engine mount will have to be fabricated. The Chevrolet transmission should be very well able to handle the increase in power but the stock rear end ratio should be raised. Higher ratio gears are obtainable through most Chevrolet dealers. Tech. Ed.*

### CARBURETOR CONVERSION FOR MODEL A

Do you know of any place where I could purchase a down draft manifold for my Model A? How do you think this will affect the operation of my car and will I need an electric fuel pump?
J. Z. Makloy — New York City, N. Y.

*• Several manufacturers still make downdraft manifolds for Model A's. If your local speed shop cannot help you, try Bell Auto Parts at 3633 Gage Ave., Bell, Calif.*

*The installation of a down draft carburetor on an A is about the best single thing that can be done to this car to increase its performance. Your acceleration and top speed will be increased a good deal. An electric fuel pump is not an absolute necessity but is recommended. Tech. Ed.*

### POWER LOSS

How much horsepower does the fan, water pumps, generator, muffler, transmission and differential rob from my engine.
Bob Wubben — Iowa

*• I am afraid that that is too general a question to be answered with a definite figure. In order to be specific it would be necessary to know the year and make of a given car, just what accessories the engine is required to drive and what type of transmission is used. Very roughly speaking, though, these items you mentioned rob approximately 25% of your engine's out put. Tech Ed.*

### WHICH IS FASTER

Would you please clear up a bet that a friend of mine and I have? He claims that a car with an automatic transmission will beat a car with a conventional shift, providing the cars are identical and the engine output is the same. I said that the car with the conventional shift would be faster on the get away and also have a greater top speed. Who is right?
Eddie Edland — Tacoma, Washington

*• You win. Generally speaking, the car equipped with the conventional type of transmission would be the faster of the two, during both acceleration and top speed runs, because of the horsepower loss through the automatic transmission. Tech. Ed.*

### TAILLIGHT TIP

I have a problem which has been bothering me for some time. It is the installation of taillights in the tips of the bumper guards on my '47 Cadillac. Would I have to make a lense or is there one available from some other car that could be adapted?
King Lee — Columbus, Ohio

*• I would say that it would be actually easier to make your own lenses than to try and use something from another car. They may be carved from a solid block of red plastic, that is available at many war surplus stores. One thing to keep in mind, though, is that to be legal, the lenses must be "reflectorized" (capable of reflecting light). This can be done by cross filing grooves on the reverse side of each lens. Tech. Ed.*

### RADIO AERIAL QUESTION

I have noticed that a lot of the beautiful customs pictured in your magazines do not have visible radio aerials. My question is: how do the occupants listen to the radio? I took the aerial off of my '51 Ford so that I could install twin spotlights and can't seem to

find a decent place to relocate it. Have you any suggestions?
Jerry Montgomery — Afton, Missouri

• *As for the cars that do not have radio aerials, I would say that they probably do not have radios. You can mount your aerial almost anywhere on your car providing you can find a lead long enough to connect it to your radio. As for a suggestion for a location, there seems to be a fad lately of mounting aerials on the quarter panel above either rear fender near the deck lid, or on the extreme end of each rear fender.* — *Tech. Ed.*

### CHEVROLET AND ROUGH ROADS

I am planning to purchase a 1953 Chevrolet coupe. I will have to drive it over rough country roads and would like information on beefing up the front end. Also, would it be advisable to install dual exhausts?
Jimmy Mikell — Patterson, Georgia

• *"Airlifts" placed in your front springs would be about the simplest way to "beef" up your front end. They are reasonably priced and easily installed. The addition of dual exhausts is a matter of personal choice but they would help your engine by relieving exhaust back pressure.* — *Tech. Ed.*

### A-V8 PARTS

I am planning on building a sport coupe utilizing a Model A body with a Ford V8 engine. From time to time you have printed pictures of A-V8's that show off the body and the engine installation very nicely but the grill and radiator shells generally used are definitely not Model A parts. What are they?
James F. McMahan — Maryland

• *The grille and radiator shell most popularly used are those from a '32 Ford. I doubt if any Ford dealer would have them in stock but they can usually be found at a wrecking yard.* — *Tech. Ed.*

### ASKS ENGINE COST

I have a chance to buy a '52 Olds engine from a wrecking yard. They are asking $300.00 for it. Is this too much?
George Cohan — South Carolina

• *The price depends on the availability of these engines in your location. Off hand I would say that this price is a little high by at least fifty dollars.* — *Tech. Ed.*

### REAR WINDOW PROBLEM

I am in the process of chopping a 1946 Chevrolet club coupe. All went well until I came to the rear window. The metal work is done and the rear window opening has been reduced by four inches. Now I find that I can't cut my rear glass due to its construction. What shall I do?
J. H. MacGregor — Grand Rapids, Mich.

• *Since your metal work is completed I doubt if you want to cut into the body again. Therefore, the only solution is to install a backlight of plexi-glass.* — *Tech. Ed.*

### ELECTRIC DOOR PROBLEM

I have removed the door handles from the outside of my '49 Ford and have installed electric solenoids. The wiring and the installation of the push buttons and the solenoids themselves was quite easy and everything worked fine. Now, here is my problem. Whenever I inadvertently hit a good size bump, the solenoid plunger falls out of its position and I have to tear the door apart to replace it. How can I overcome this most perplexing problem?
Mel Jensen — Salt Lake City, Utah

• *I can only assume that the problem lies in the mounting of your solenoids. The most practical mounting position is horizontal but will require running the cable over pulleys.* — *Tech. Ed.*

### PAINT PROBLEMS

After many long, hard hours of work I finally had my car sanded down and all ready for painting. I purchased three gallons of metallic green lacquer and a quantity of thinner. I got out my trusty spray gun and was all set to go to town when the paint suddenly began to develop what resembled "fish eyes." The paint supply store could shed no light on my difficulty so I am writing to you in hopes you can explain the trouble.
William Kennedy — Walla Walla, Wash.

• *Hmmm. It may be that your dealer supplied you with enamel thinner to mix with your lacquer, which, of course, will not mix. If both the products are, indeed, lacquer base it may be that you got ahold of a bad batch of thinner. If this is the case I would suggest writing to the manufacturer with the idea of having them either refund your money or replace the thinner.* — *Tech. Ed.*

### LOWERING

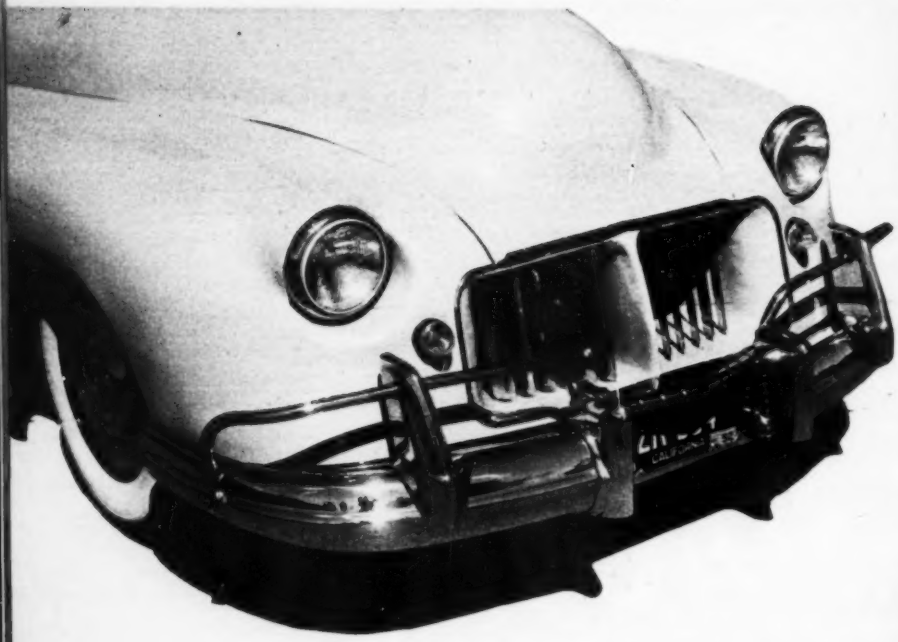
With all this talk of chopping, channeling and lowering by various methods a question has arisen here at school that perhaps you could give us an answer on. Just exactly how far can you lower a car?
Phil McCord — Galveston, Texas

• *Wow! We could write a book on the different methods of reducing the height of a*

*(Continued on page 66)*

THINGS

S TO COME



## *Is this custom indicative of what the future holds?*

**Photos by Poole**

ALL DURING World War II, George Shilala had his heart set on building a car. He wasn't sure just what it was he wanted but he spent most of his spare time making sketches of possible styling details. When the war was over work was begun in earnest and he worked over his drawing board for several months. George felt that the actual construction of his car would take some time so he tried to look into the future and visualize things to come so that the car wouldn't be out dated before it was finished. George seems to have been successful along these lines for the finished product probably won't be out of date for some time to come.

Finally the drawings were made and George set out to find a chassis with a 125 inch wheel base around which the proposed car had been designed.

Eventually he ran across a burned 1942 Oldsmobile, series 76, four door sedan. The first step was to remove the body and throw it away saving only the front fenders and such things as the door window regulating mechanism, etc. Starting out to construct a car, even with a chassis to work with, can be a most disconcerting adventure. George took a leaf from the book of the foreign car builders and constructed a body frame of tubing around which the actual panels could be fitted. When the tubular framework was completed George arc-welded it to the frame rails of the chassis for rigidity.

The body paneling started with the front fenders. The fenders from the original Oldsmobile sedan had been saved so George cut off the front of each one, using only the front crown and the headlight mountings. The remaining parts of the fenders were constructed out of sheet metal following the drawings down to the last details. This idea of using drawings in building a custom is not a new twist by any means. George knew, when the drawings were completed, just what his car was going to look like. Many would-be customizers would benefit from using this same method even if the proposed changes were only for a new grille treatment for a production car. Paper is much cheaper than metal and a body man's time.

The body work progressed steadily but slowly, it being a spare time project. Incidentally, George is employed full time by Kurtis Kraft, one of the foremost builders of

race and sports car bodies and chassis.

The most difficult part of the entire job was the construction of the doors which are ten inches thick. As was mentioned before, George had retained the original window mechanism so the doors had to be built around these units. Patience is rewarding, in most cases, so the doors were eventually completed and mounted on the body.

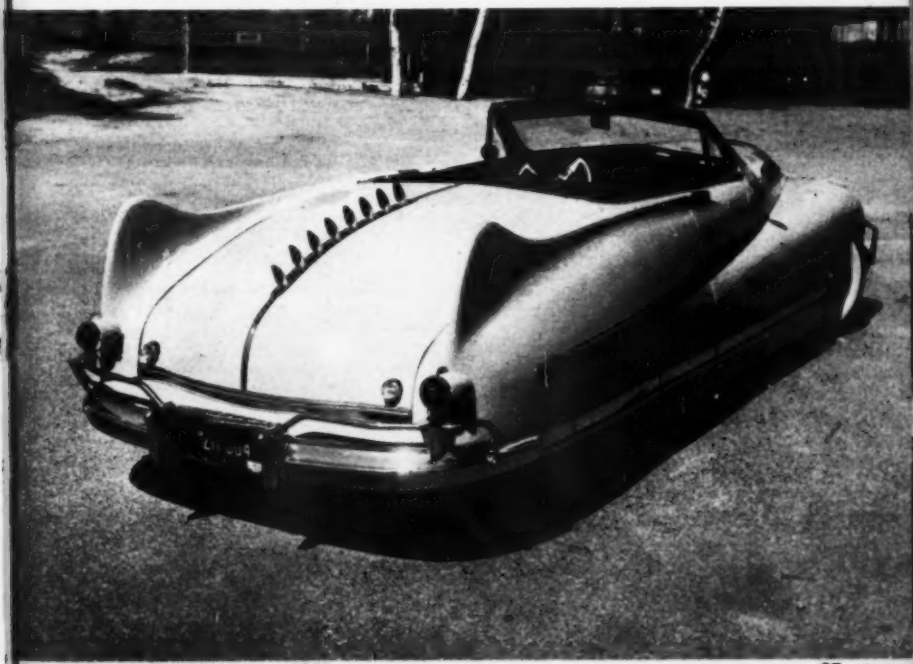
When the paneling was finished attention was turned to the hardware and exterior chrome trim. Realizing that a molding positioned in a wrong location can make or break a car, many hours of deep thought were required. Much of the trim was hand formed then chromed, but some of it was borrowed from other cars. All in all, the custom contains parts from seven different makes: Olds, Studebaker, Dodge, Chrysler, Ford, Merc. and Chevy.

After six long years the car was at last completed and the results are shown on these pages.

Because all of the work was done at home, George was limited to using only small hand tools. He used an oxy-acetylene welding outfit but most of the heavier welding was done with a small portable arc welder that received its power from the light current.

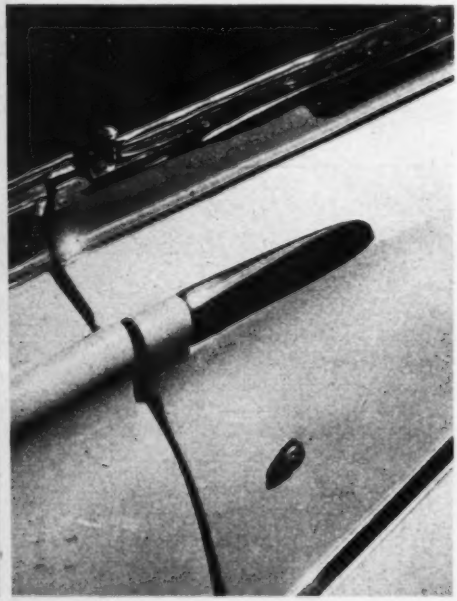
Instrument panel is very simply made with one multiple instrument located in front of driver.

Unusual fender skirts are square in difference to the usual rounded style of most cars. Fins on rear fenders give the car a different look.



Oldsmobile taillights are set into bomb-like housings that are attached to rear fenders.

Doors were entirely hand made excepting hardware. Handle pivots downward to open door.



The "exhaust" stacks situated on the deck lid serve no purpose other than ornamentation and ventilation for the rear compartment. They were originally placed there with the thought in mind that cars of the future may someday be rear-engined and will require vents of some sort.

The car is one of the few hard top convertibles that can actually be converted. The metal top can be lowered hydraulically into the trunk compartment which opens automatically to receive it.

Gasoline is carried in a hand formed tank that is under the trunk floor. The filler caps, two of them, are situated on either side of the car—one in each door jamb. This is another neat trick that not only causes the filler caps to be hidden and out of reach when the car is locked but also makes it easier to fill the tank from either side.

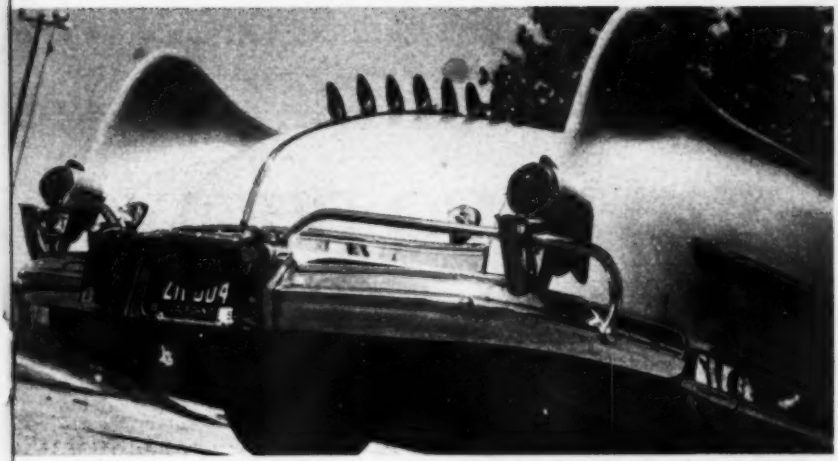
The overall height of the car is fifty-eight inches while the ground clearance is a comfortable five inches. Motive power is still supplied by the original six cylinder Olds engine using the Hydra-Matic transmission. Plans are under way, though, to install a late Cadillac engine whenever time and money will permit. When it is installed, incidentally, it will be up front in the normal location.

George and his father did all of the upholstery work, also. The interior is done in genuine leather that has been dyed a cherry red. George built the seat frames and covered them with foam rubber for comfort.

The top of the car is painted a chocolate brown metallic while the remainder of the body is lemon lime yellow.

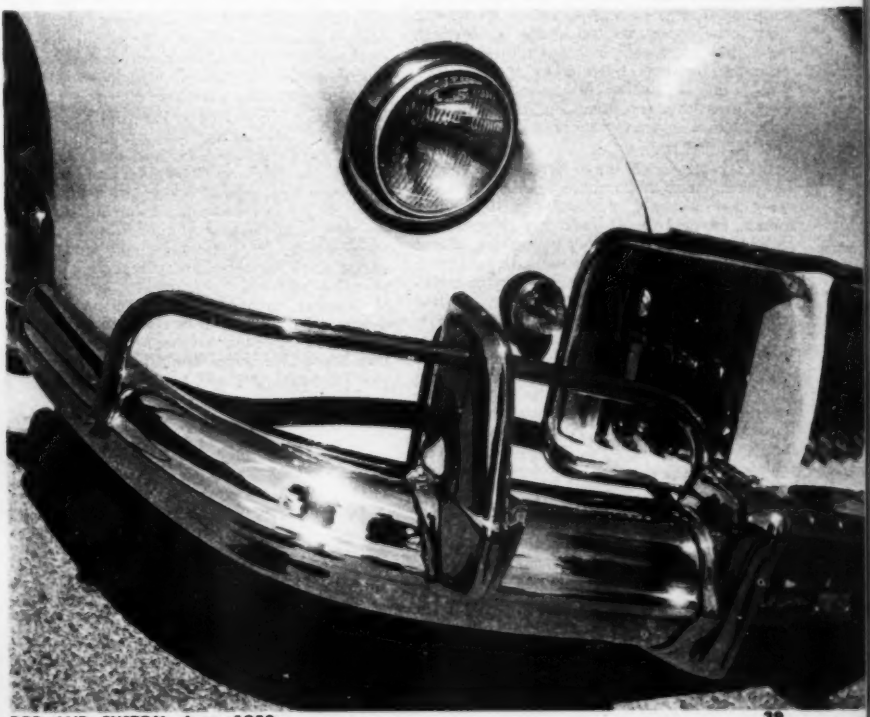
The 4200 pound car receives a lot of comment wherever it is driven, some of it unfavorable, most of it complimentary. One way or the other, George doesn't seem to mind. At least his is a car that is a true custom, not a re-hashed production model.

Owner George Shilala shows how deck lid opens.



The tremendous amount of work that George has done to this car is evident from any angle.

Handbuilt grille and bumper guards are different from any other car and are well made.



# INSIDE THE AUTO SHOWS!

HAVE YOU ever walked between row upon row of gleaming custom cars and hot rods at one of the post war auto shows and wonder how they got there? Or have you ever wondered what type of people own cars such as those or how the management of the show was able to assemble all those cars under one roof at one time? How about the owners of the cars. What are they doing while their transportation is being displayed? These and many other questions, no doubt, go through the minds of people making up the crowds attending the shows but what are the answers? What goes on behind the scenes at one of these great shows? Read on, then, and we will attempt to answer these and many more questions for you.

Let's begin by taking a hypothetical show. Let's pin point the location and say that the show is to be held in Podunk, Illinois, next month. Several months ago the promoter of the forthcoming show began making plans. He located a backer, someone with money to invest, and went out and made arrangements to rent an auditorium for the dates the show will run. The next step is to make the show known to the public. This is done by inserting announcements in all of the auto magazines and, possibly, newspaper ads in the parts of the country having a large grouping of typical cars; Florida, California and New York, for example. The magazine announcements include the dates the show will run and it is directed more toward possible contenders than the attending public. Very inviting words are used to catch the attention of car builders. Generally, mileage allowances are given plus a big build up on the trophies awarded the winning cars in each group.

Cars are classified according to their type; hot rod, custom, classic or antique. (A wide variety of cars are invited to attract the greater number of ticket buyers.) Each of the general types are further broken down into distinct groups; for instance, the hot rod. Street roadsters, competition roadsters, street coupes, competition coupes, etc., are the average type of grouping used. In actuality there are nearly as many cars as there are classes so that nearly everyone will take home a trophy of some kind.

So much for that! The dates are definite and a management group has been selected. The press has been called upon to make the event known to the public and arrangements have been made for the wholesale buying of presentations and awards. One of the several methods for judging has been decided upon and the order for admissiion tickets has been given to a printing concern.

Let's say, for example, that the possibility of entering his car has been decided upon by a man in California who has, he thinks, an outstanding hot rod. The offers of mileage allowance and expense money plus the guarantee of a special award for having come so far have overwhelmed our friend and he answers the ad in a magazine and sends in a snapshot of his car. The management of the show has selected one person to be the judge of possible entries and this person decides that our friend's car is acceptable and sends him a flowery letter together with an information blank. The form lists all the things that can be done to a car, and more, and it is

expected that the prospective entrant will fill out the blank according to form and return it along with a professional photo of his car.

Our friend lays out five dollars for the re-

quired picture "to be used for publicity purposes" and hustles around making arrangements to get off work, etc. Checking the entry form once again, before sending it off, our friend finds that a "deposit" of $25.00 is necessary so that the management of the show will be assured of the arrival of the car. Al-

though this dampens our friend's usual good spirits, what must be done must be done, so off goes his hard earned money with the entry blank.

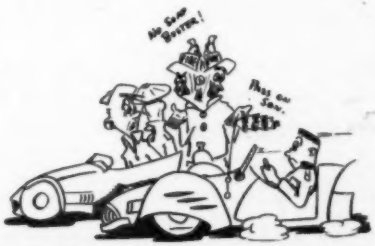
Much has to be done before the departure date so our friend gets busy readying the car for the 2000 mile trip from California to Illinois. The car is gone over quite thoroughly and any little items that may cause trouble are thoughtfully eliminated. A few days before departure, our friend receives a letter in the mail from Podunk. Included in the envelope are a notification of the official acceptance of the car, a windshield sticker showing that the car is an official participator, a list of rules and regulations of the show, and a receipt for the $25.00 deposit.

The big day has, at last, arrived and our friend, together with his best pal whom he has encouraged into accompanying him on the journey, take off in an easterly direction.

Their spirits are soon dampened, however, as they encounter a rain storm near the California border. Little can be done, though, so onward they plunge, the rain mercilessly beating on them in the topless roadster. The following day brings a clearing sky and we find a thoroughly muddied car. The beautiful white wall tires are a nice shade of brown and the lovely chromed header pipes have become covered with a layer of road oil thrown up by the front wheels. On and on they go, Podunk coming closer as the miles are clicked off. Though discouraged, the promised two cents a mile keeps them going. $80.00 is not to be sneezed at, besides there's expense money (aside from gas allowance).

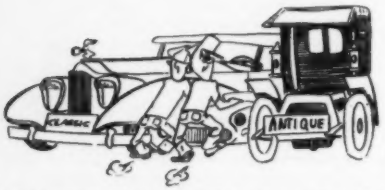
Podunk at last! The first step is to look up the show manager and notify him of their arrival. The thoroughly disinterested show manager tells them, in a monotone, where the show will be held and sends them off to clean up the car. A full day is required for this operation, what with locating a place to clean the car (not arranged for by the show) and procuring some polish and wax.

With the car sparkling once more, the auditorium is located and they proudly drive up to the exhibitors entrance. The man at the gate scornfully tells them that the gas tank in the car will have to be drained and filled with dry ice (local fire law) before the car can enter the building and the battery will have to be disconnected. This is done under darkening skies in the parking lot, and the gate man opens the doors to let the car inside. With no help from attending show personnel, the two men push their car up the steep ramp and into the building just as the rain begins. The car just missed being thoroughly soaked by a few scant seconds. There are several cars in the parking lot, though, that had been previously cleaned and the owners plead with the gate man to let them get just inside the doors to drain their gas tanks so they won't have to go through the process of cleaning the cars again for exhibition. Naturally, the gate man answers them with a dark scowl, then gleefully shakes his head. Positively no! About that time the nephew of the show promoter arrives with his




custom (?) and he is immediately allowed to drive right into the building so he won't get his feet wet.

Inside the building are cars of every description; all sizes, shapes, and colors. There is the usual confusion everywhere but at last some kind hearted person points out to our friends the prescribed location for their car; in between an antique and a twenty-foot-long-and-ten-foot-high classic. The little roadster, overshadowed by the neighboring behemouth,




looks pretty nice so our friends wander off to see what's what. This being the eve prior to the opening of the show, a local television station has been asked to do a broadcast from the auditorium; free advertising, undoubtedly. Most of the air time is taken up by the announcer in describing the custom car belonging to the promoter's nephew, while the remaining time is given over to the describing of how to reach the building from down town Podunk.

After a night of trying to locate a decent place to rest their weary heads (not arranged by the show) the two buddies give their car a final dusting off. At ten minutes to show time someone discovers that all the cars are not protected by ropes to keep the curious public at a safe distance. A hurried search is started by everyone concerned and, *after* the public

has been admitted to the auditorium, proper stands are found and placed near the unprotected cars. It is then discovered that there is no rope to string between the stands so a quick meeting is called in the manager's office and funds are eventually appropriated with which to purchase the necessary material. Meanwhile, curious, sticky fingered kids are examining the cars much more closely than the owners would like.

By the time our friends return to their car they find it occupied by a fat lady who is trying out the upholstery. Her small son, with ice cream dripping off his chin, is trying to balance himself on the non-fendered front wheel but, what with his muddy shoes, is unable to do so. Less than ten feet away is a "guard" who is, obviously, looking the other way quite unconcernedly. Hurriedly shooing

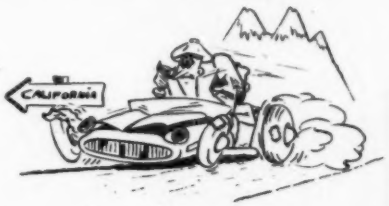
away the over eager spectators, our friends are forced to stand by their car to protect it until the rope is brought to the scene and strung up. (The spectators should have been.)

Many other unfortunate occurrences, too numerous to mention, take up the ensuing time of the show but, finally, the last viewer is ushered unceremoniously from the building and the exhibitors are asked to stand by for the presentation of awards. The winning car in one classification is owned by a fellow who, quite obviously, has a personal friendship with a member of the management, but the remainder are awarded more or less fairly. Our two friends are awarded second place in their category and, smilingly, carry off a $3.00 trophy. The car that won over theirs was

hardly a hot rod in the truest sense of the word but all's fair in love, war and auto shows. (The winning hot rod looked more like a strictly professionally built Indianapolis type race car.)

Also awarded with the trophy was their expense money for the entire week ($30.00),

the return of the deposit ($25.00) and the gasoline allowance ($30.00). Wait a minute! The gas allowance was supposed to be $80.00 not $30.00. This is what happened: Printed at the bottom of the entry blank, in very small type, was a notice concerning the allowance. The two cents a mile was to be paid to own-




ers of cars coming from a distance of *more* than 500 miles from Podunk *up to* the 500 mile point, *one* way only! Therefore, our hot rod owner could only claim two cents a mile for 1500 miles, not 4000.

With an outlay of nearly $400.00 (including time lost from work) and a return of only $85.00 ($30.00 of which was his in the first place) our hero, together with his disgruntled pal, climb into the smeared up car and wearily wend their way back across the midwest, the one dutifully driving, the other holding on to the trophy so it won't blow away.

*It is not the intention of the Editors of ROD and CUSTOM to slam any one particular show. Rather, the article should serve as a warning to car owners who may think it would be an interesting experience to exhibit their cars. The following incidents have actually happened, though not at any single exhibition.)*

**Safe-Glow Reflector**
**PREVENTS ACCIDENTS!**

Amazing New Discovery that glows bright in the dark as light draws near.

- Ideal as markers on Cars, Trucks, Buses, Trailers, Bicycles, etc.
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Reflects 200 times more light than white painted surface. On this reflector are thousands of microscopic beads that reflect and throw red light back. Withstands all weather conditions. Stays clean, brilliant and bright. Size 24" x 1". Pressure sensitive, adheres to any surface. Money back guarantee! Sorry, No C.O.D.s.

SEND NOW! Mailed prepaid. **$1**

SAFE-GLOW, 1915-M Archer Ave., Chicago 16, Ill.

# Salon

Barris Kustom shop restyled this Chevrolet convertible. Photo by Marcie Campbell.

Dick Songer, an electrician by trade, built this fine custom using a Cad chassis & body & Marmon V-16 engine. Photo by Norris Ewing.

This Chevrolet '40 Xbrc is a good example of the craftsmanship of Jimmy Summers (with car) who is one of this country's top metal men.

# COMING SOON

## *The place to BUY, SELL or TRADE!*

Surely you must have some parts laying around the garage that are of no use to you any more but may be of some use to someone else. Maybe you need a hard to get part that is out of production; your friends don't have it but someone a thousand miles away does. "Variety Mart" is the place to find that part because it covers the United States and Canada.

## *Here's how it works . . .*

Tell in 25 words or less (not including your name and address) what you want to buy, sell or trade. Each ad may list any number of articles but only a single car may be listed. The cost per insertion is only a dollar. NO COMMERCIAL ADVERTISERS PLEASE. We will not be responsible for the accuracy of ads but will edit any that seem misleading. The ads will be placed on a first come first served basis. Payment must accompany each order.

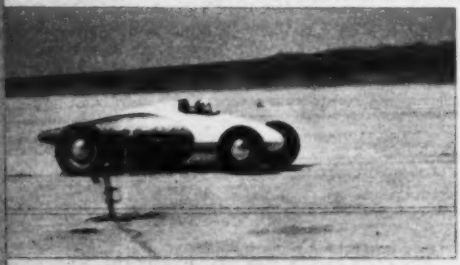
## *Remember . . .*

This feature will start in the August '53 issue and will be a regular column from then on. If you have or want some hard to get part, get busy and send us your letter today. Address all such letters to ROD & CUSTOM, VARIETY MART, 530 W. Colorado, Glendale, California.

**variety mart**

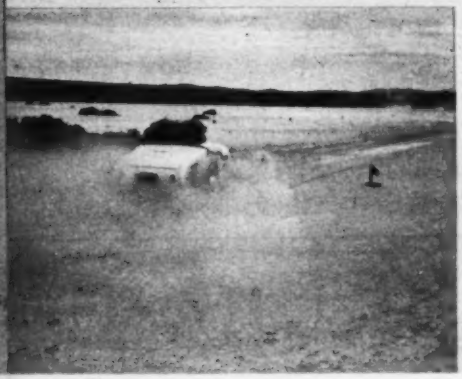
- BUY
- SELL
- TRADE

# those were the days...



Alex Xydias in the So-Cal V-8 60 tank, in 1948 turned 132 mph at El Mirage dry lake.

Randy Shinn's low slung T modified roadster gets under way at El Mirage in cloud of dust.



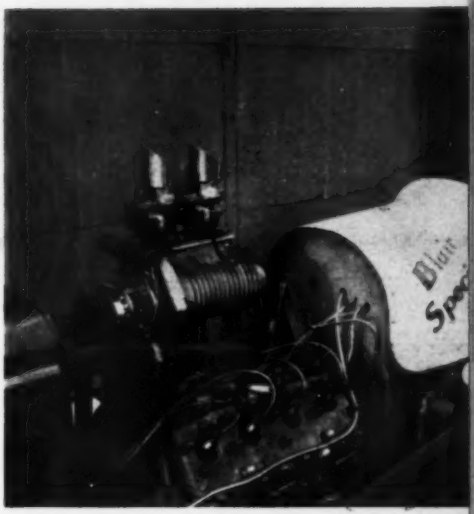
SOME FELLOWS think of the lakes as events starting back before the second World War. Myself — I just got started about that time and used to go out to Palmdale and then over the rough roads that led to the lakes, dreaming of the day when I, too, would be a competitor there with a red hot outfit. Although this was only 1946, and most of us fresh out of the service or about to get out, the trend was starting to go commercial.

Today, only a few are left of the hundreds who used to compete. Saturday night used to see hundreds of cars, lined bumper to bumper (if they had them) waiting for the first run in the morning. Sleep was next to impossible as eager beavers fired up their outfits to make last minute checks of their frenzied tuning. True, the speeds weren't as great in those days a few years past, but the enthusiasm more than made up for it. Remember when Edelbrock and Potvin carried on their experiments with methanol for fuel and lots of fellows thought they were crazy for not sticking to gasoline? AND the morning the low slung '27 T roadster of Randy Shinn turned the fantastic speed of 127 mph. Boy! When that engine fired up the tingles ran up your spine. It really sounded great. Randy could hardly get to his car for fellows taking photos of it.

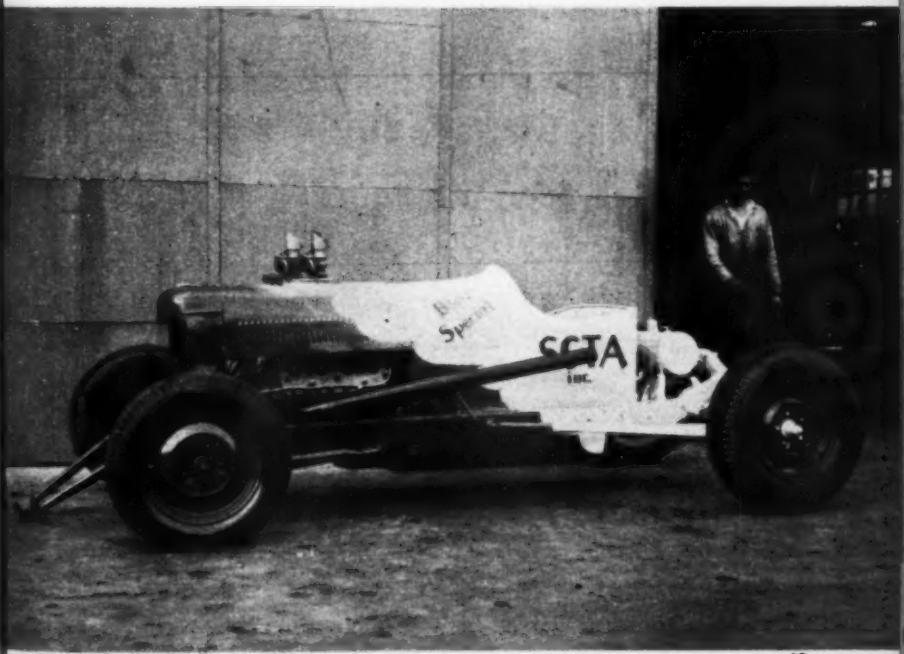
... Lou Baney turning 124 mph in a stock bodied '32 roadster with a metal sprayed ⅝" crank while others still thought ⅛ stroke was a big engine ? ? ? Those were the days when most of the lakes competitors drove their cars to work on Saturday, drove to the lakes that evening, competed the next day and drove home to use the car the next day

for the journey back to work after an enjoyable weekend.

Triple manifolds were as much a rarity as the four has been up till this year – the mysteries of using methanol were as hazy to most as some of the secret super fuels are today – quick change rear ends were a rarity instead of a necessity – 110 mph was fast for a coupe – sedans were unheard of as competition cars – bucket seats were still not available in war surplus – four barrels still ran and turned up competitive times – Chevys and GMC's of the 6 hole variety were unheard of as competition to the invincible V-8 Ford and Mercury – you could run a whole lakes meet without moving the course several times to find a spot that wasn't chewed up so badly that it was dangerous to use – only a few "hot dogs" towed their cars to the lakes – fewer still used trailers. Remember the old Capanna-Ouse Marmon roadster that used to run 145 mph and sounded as if it could do it all day long without trying? And Tom McLaughlin's Auburn roadster with the poor man's Ferrari – Lincoln Zephyr V-12 in it – not to mention that stretched out '34 roadster chassis with the Cadillac V-16 in it.



Engine of Don Blair's modified V-8 showing installation of Mercedes-Benz roots blower.




Don Blair's "goat" as it appeared immediately after the war. Top speed of car was 141 mph.

Harvey Haller entering traps in his yellow modified '29 roadster with Marc V-8 engine.

Multy Aldrich BCH (before crash helmets) starts through course in his T roadster.

Usually it was mid day by the time everyone had had one run. Then things were closed down for record runs — second runs often had to wait till later in the day.

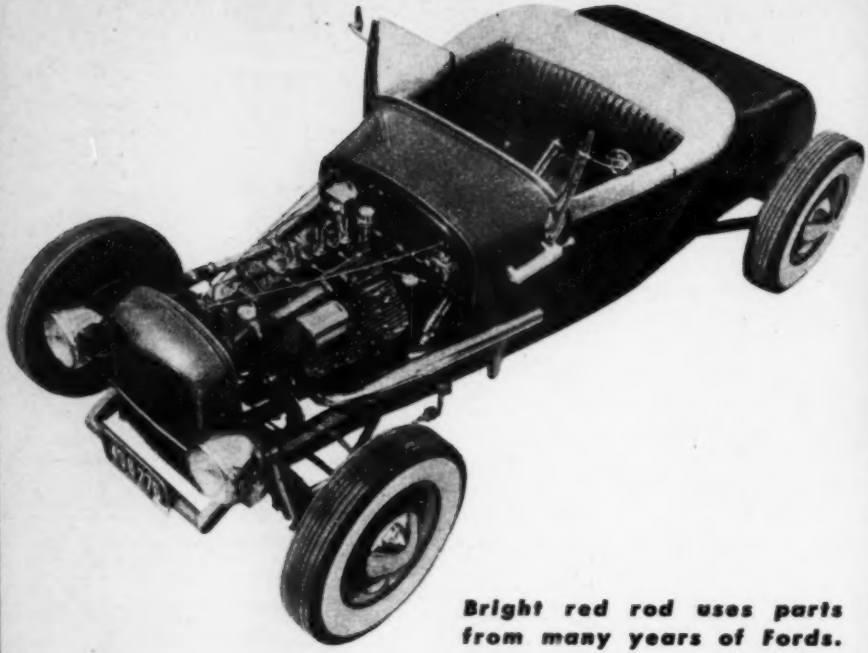
Things are different now. The high cost of competition has driven many to sell their cars or convert them into sports cars. Fuel and commercial sponsorship has probably caused much of the decline of the lakes interest, along with the fact that with the speeds we are reaching for now that it is really safer to wait and run once each year at Bonneville. Drags have undoubtedly taken their toll of competitors as you can drive for less than an hour and get to one of three drag strips in the Los Angeles area. Then if you blow up you have less distance to tow home. Too, you have no worries about adverse winds or course conditions at the drags, but these too are starting to lose some of their interest because of high cost of competition.

Readers of Rod and Custom may have answers to this problem that confronts us in Southern California. It is unfortunate that much of this fine organized effort can't be transferred to some other part of the country where the law frowns on even organized drag racing.

What will happen to the lakes? Lots of fellows that I know are refusing to go to the dry lakes this year. We stowed our outfit away. The last time we had it up to the lakes the driver was sideways three times at 140 mph — which doesn't make for keeping the stomach and Adams Apple in the proper position in one's anatomy! Unless the rains did a lot during the winter to smooth off the course, and unless the various groups involved can stay off the surface of the lake till it has a chance to get hard, the chances are pretty great that dry lakes racing will be totally ended this year due to the safety factors involved in driving down a course that is like a plowed field!

Oh well — I can always save my nickles for Bonneville!

HOW TO BUILD A LAKESTER!
SUPER MARKET
10¢ TRIP TO THE MOON
TERRA



*Bright red rod uses parts from many years of Fords.*

# ...Beautiful ROD...

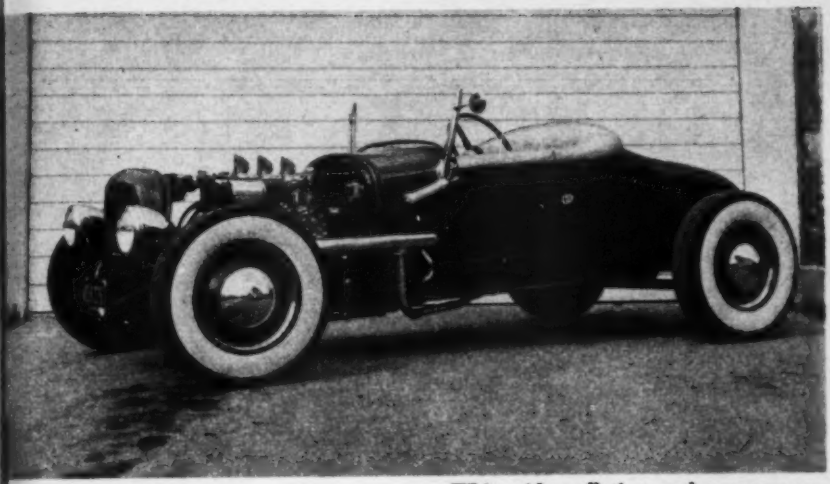
Photos by Poole

QUITE a few years ago Sal Macchia and Lou Banto decided that they should combine their resourcefulness and build a car. Just what kind of a car it should be was no problem, they were both roadster lovers from way back. There having been no trouble in deciding what year body to use (they chose the '27 T) the only problem was the locating of a body. '27 T roadsters aren't just lying around loose here in Southern California. Their popularity for rod use having exceeded the rather limited supply. One was eventually located, however, and the two men started to work in earnest.

A '32 Ford frame was procured and this is where the actual construction started. It was decided that the body should be channeled so the frame had to be narrowed to allow the body to fit around it. The rails were moved closer together by narrowing the cross members then rewelding the whole thing back together again. Whatever holes in the frame that were exposed to view and were not to be used for the steering gear, mounting brackets, etc., were welded closed and filed smooth. Incidentally, this is a neat little trick and does a great deal for the resulting appearance.

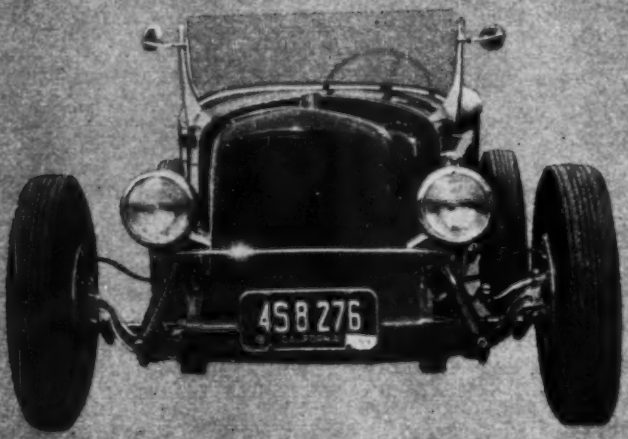
A dropped '32 front axle was obtained and fitted to the chassis. A rear end was also dug up, along with its various accessories, and installed on the chassis which was, by now, beginning to look like something.

The rather sad looking body now received the same careful revamping as the chassis. All of the million and one little dents that

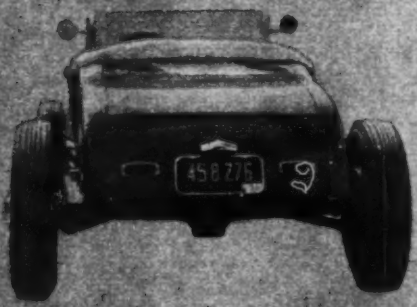


White side wall tires and generous use of chrome give the car expensive look.

Building a roadster like this can be time consuming but result is worth it.

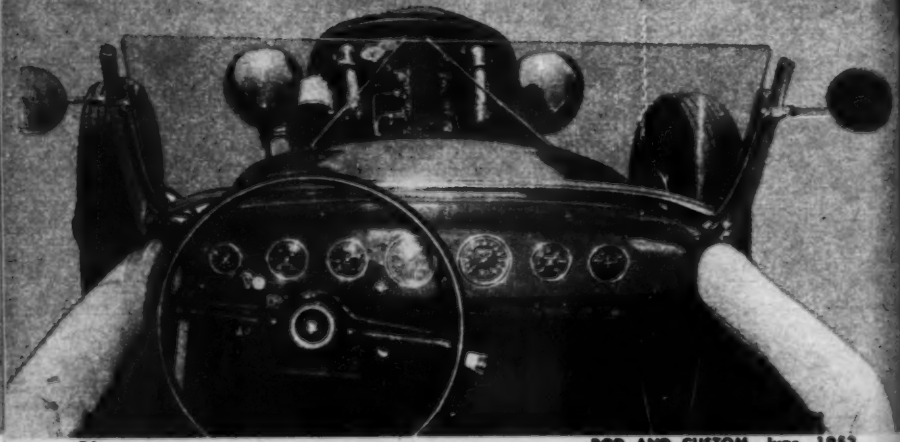



Head on view shows tubular shocks and dropped axle. All brackets are chromed.




Chevy taillights flank license plate. Trunk contains gas tank & the battery.

Well planned interior has neat arrangement of instruments. Note side shift.



are to be found in almost any body of this age were eliminated. The joint between the tail section and the body bucket was eliminated by welding and filling. The deck lid handle was discarded and the hole filled. The lid that had formerly covered the gas tank fill pipe in the center of the cowl was removed and the opening paneled over.

The original windshield brackets and frame were retained but were chrome plated before reinstallation. Chevrolet taillights were positioned on the body panel below the deck lid on either side of the license plate.

Looks are one thing, of course, but the motivating force is another. Lou and Sal obtained a '42 Mercury block and proceeded to work it over with the same careful efficiency as they had the body and chassis. They bored and stroked it 3 5/16" and 4 1/8" respectively. The engine also carries Weiand heads and triple manifold, Kong ignition, Howard cam and all reciprocating parts are balanced.

With all the smaller parts of the car either chrome plated or polished the little roadster was given a very thorough bright red lacquer job. The interior was beautifully upholstered in red and white leatherette which was both pleated and rolled.

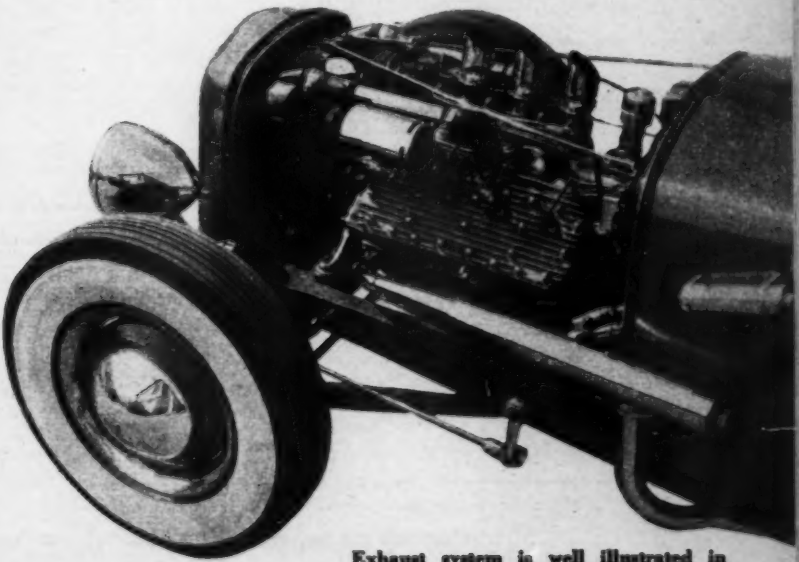
When the car was completed both the co-owners gave it a lot of use. It was a familiar sight on the streets in and around Los Angeles. The inevitable eventually happened, though, the car was sold.

It was not sold, however, with cooled enthusiasm. Rather, Lou and Sal knew, having built the car themselves, where improvements could have been made. As soon as the little jewel was disposed of work was started on another one. Surprisingly enough, when their second car is parked alongside the original one, it is difficult to tell them apart excepting for the grille shell.

When the T was offered for sale there was a mad scramble of prospective buyers but, when the rush was over, Bill Greenbaum and Don Chapman, both of El Monte, were the lucky ones who came out on top.

Although the car was built some time ago it is still in the same tip-top shape today. Less than two weeks ago new co-owner Chapman tooled the buggy over the Pomona quarter mile drag strip at 105.14 mph using ordinary pump gas.

The car is, once again, up for sale, it having a little more power than the new owners care to handle. Who ever has it next will undoubtedly agree that he has purchased "One Beautiful Rod."



Exhaust system is well illustrated in this view. With plugs in header pipes, exhaust is routed through mufflers located under the car. Plugs are removed to reduce back pressure for speed runs.

Powerful Mercury engine is reasonably easy to keep clean because every conceivable accessory was chrome plated.

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# 5 WAYS TO POWER!

## The fundamentals of increasing the power of your engine

By Fred W. Fisher

BASICALLY, there are just five things that you can do to improve the power which is produced by your automobile engine. If you wisely study these five ways that power can be added, you'll end up with a winning combination every time. These ways are:

1. Raising the compression
2. Adding additional carburetion
3. Improving the exhaust system
4. Improving the ignition system
5. Modifying the camshaft

*In conjunction with these major steps, minor steps such as porting, relieving and valve installation will be discussed in future articles.*

A recent magazine article in an Eastern publication missed the boat completely. It's author indicated such dubious ways of hopping up a car as adding special oversize radiators, aircraft type coolant, and even chroming the interior of the exhaust manifolds to reduce friction of the exiting exhaust gases. Since we have had to hop up hundreds of cars without resorting to such "special" measures as these (which would take your money and give you nothing in return), we felt that you, as readers of ROD & CUSTOM should get it straight right from the start. Then you'd not blame us for recommending items which didn't add one additional hp to your engine while draining your pocketbook.

### (1) RAISING THE COMPRESSION OF YOUR ENGINE:

Perhaps the first idea that crosses the mind of someone about to hop up an engine is to mill the cylinder head, or install a special high compression head.

Why raise the compression? Well, raising the compression squeezes the gaseous fuel and air mixture tighter and causes it to produce more power from the same amount of fuel. If you squeeze the fuel too tightly, it will "talk back" to you in the form of detonation and pinging. For that reason, stock compression ratios are purposely kept low, because the maker knows that most people will not bother to keep their cars well tuned and carbon free and that premium fuel may not always be available.

In order to provide ping free operation and high compression at the same time, some makers, notably Hudson, have provided optional aluminum high compression heads.

These are far superior to their cast iron cousins in that they can be used with higher compression on similar fuel without causing detonation. This is due to the temperature equalizing effect of an aluminum casting, which reduces the temperature of the combustion chamber and tends to remove any hot spots. For this reason, if you possibly can, you should install an aluminum high compression head on your car. Heads are available for Ford, Mercury, Plymouth, Dodge & Ford Sixes, also Willys. Few aluminum heads are available for OHV engines, but even these are becoming available. Among these are Howard's *DeSoto heads, the Fisher 12 Port GMC head,* and the *Nash "Le Mans head."* The *Ardun Ford Heads* have long been made out of aluminum and have been quite successful. Nicson is now bringing out an aluminum head for Chevrolets 1937 through 1952 standard models.

Unfortunately, too much data has been erroneously provided on milling and many fall by the wayside in their attempts, some even going so far as to wreck their engines in the process. Certain clearances are built into your engine at the factory and must be retained if the engine is to function well. Foremost of these which must be considered when milling a head are the following:

*(Continued on next page)*

1. Clearance between head and valve
2. In OHV engines, clearance between valves and pistons
3. Clearance between crown of piston and combustion chamber
4. Clearance between spark plug and valves, or spark plug and crown of piston.

Taking these in order, we find that after milling a cylinder head that the clearance above the valves has been reduced. This must be regained so that the valves will have plenty of space in which to function properly. If proper clearance is not provided, the valves will hit the head, and they will usually bend. It is generally considered wise to allow at least .060" over the head of each valve, and .060" over the crown of the piston.

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These clearances can be easily checked by using strips of modeling clay, placed across the head of the valves after they have been adjusted for operating clearance. A similar strip is placed across the crown of a domed type piston. Note: Clearance over crown of a flat top piston will not be affected on flat head models, and sufficient clearance will be maintained by the stock gasket. Check clearance over valves, though!

After placing the modeling clay across the valves and head of piston, (being careful to use strips about ⅛" square) install the cylinder head with *two* gaskets in place. Tighten the cylinder head bolts evenly to factory recommended torque. Turn the engine over twice (720°). If any binds or resistance to turning is encountered don't use force! Investigate and find the trouble!

Measure the thickness of the clay with a 0-1" micrometer. Measure the thickness of a compressed head gasket (preferably the used one that you removed when you tore the engine down). Subtract the thickness of one head gasket from the thickness of the thinnest part of the clay and you will have the measurement of the clearances that you want to know.

EXAMPLE: Assume the clay measures .105" at its thinnest point. Assume gasket measures out at .055" (compressed, used gasket). Subtract thickness of one gasket from thickness of clay. .105"-.055"=.050" clearance. This shows that .010" additional clearance has to be provided. This clearance over the valves can be gained by "flycutting." Clearance over a domed piston is obtained by "doming."

The clearances should be checked again by the clay method after doming or fly-cutting, to make sure that nothing is "haywire." Actually, the clearances given here would be excessive for an all-out racing engine. Clearances over the valve and piston in a racing engine (for a flat head V-8 Ford or Mercury) would not exceed .030" as the heads on such engines are usually removed fairly often for periodic checkups and carbon can be removed at that time. Road jobs are seldom worked on and the carbon deposits will pile up and cause interference unless sufficient clearance is provided. If your local machine shop cannot handle these operations economically, they can be ordered from most of the Los Angeles Speed Shops.

If your engine has flat top pistons then you need only to check the clearance above the valves, this can be accomplished in the following manner. Place the cylinder head in position with two head gaskets. Rotate the engine so that the valve you wish to check is at maximum lift. Tighten the head into place using recommended torque figures. In-

*(Continued on page 60)*

A lovely blond: Joan Moeller, former "Miss Southern California," poses prettily for Rod and Custom photographer Bill Bagwell.

## FIVE WAYS TO POWER

*(Continued from page 58)*

sert stacked up feeler gauges between the tappet and the cam lobe nose, or between the end of the valve and the tappet. When you have determined the amount of clearance, remove the cylinder head, measure the gasket (compressed used gasket) and subtract as for the clay measuring method.

If you have an OHV engine (overhead valve) such as a Chevrolet, which has the intake valve positioned directly above the piston, with little clearance, measure this clearance on the stock head before attempting to mill. Since this clearance between the head of the valve and the top of the piston will be lost when the head is milled, it is necessary to re-establish this clearance after milling, or the piston and the valve will hit, causing severe damage to your engine.

Additional clearance after milling can be provided by lowering the valve seat and grinding a new valve seat. A good rule of thumb is to sink all intake valves (Chevrolets) as much as you mill off the head. (Not necessary when using 1937-40 heads.) If you mill the head .125", sink the valves a like amount. Don't bother with the exhaust valves as they don't come even close to the piston. Chevys equipped with domed pistons must be equipped with flat top pistons before milling the head.

On engines equipped with hemispherical heads, such as the new Dodge, Chrysler, and DeSotos, the pistons would have to be flycut deeper to allow additional operating clearance for the valves. Therefore, it is likely that owners of these cars will raise the compression by installing pistons with higher crowns and deep "cutouts" for the valves.

Heads from Cadillac, Oldsmobiles, and Studebaker V-8's can be milled without worrying about interference between the valves and pistons. However, it is necessary to grind a new groove for the rocker arm oil supply on the Cad and Olds heads. Failure to do so will not allow any oil to the rocker arms and will set your engine up for expensive repairs.

Where heads used in conjunction with hydraulic lifters are milled, then the pushrods should be milled off the same amount as the heads, or the hydraulic lifters will not function properly. This will not hold true where adjustable pushrods are installed or if the engine is equipped with rocker arm adjusting screws.

Where pushrod length is not shortened on engines such as Straight 8 Buicks or Chevrolets, ½ the amount milled from the head

**"But the radiator can't blow up in your face again, Max, because we fixed it!"**

should be machined off of the end of each valve in order to retain the proper relation between the rocker arm and the valve. An easier method is to install spacer washers (½ the thickness of the amount milled off) under the rocker arm stands.

These spacers can be used on Chevrolets only, as most rocker arm engines supply rocker arm oil through one of the rocker arm stands. Such engines must have their valves shortened as mentioned in the preceding paragraph.

When raising the compression ratio of either aluminum or cast iron heads, it is important to remove all sharp edges from each of the combustion chambers. Milling leaves a sharp edge, which must be removed. The manufacturer cannot adequately clean out the combustion chambers of every car, and you may find protrusions or little sharp bumps in the combustion chambers. These should be smoothed out. The best way to do this is to use a flex shaft tool or a small hand drill with a sanding drum or mounted stone.

Care in removing these sharp edges will allow compression ratios higher than would be possible if they were left in the head. If you find that pinging is too great after milling your cylinder heads, it may be necessary to install a water injection unit, retard the spark slightly, or use better fuel. Some merely reduce the amount of advance given them by their distributors by the simple expedient of unhooking the vacuum advance mechanism. Of course if your distributor depends solely upon vacuum for its advance characteristics, this doesn't work out too satisfactorily! MALLORY distributors can be ordered with special advance mechanisms for high compression use. VERTEX magnetos can also be ordered with special advance curves built in if you so desire.

Raising the compression of your car will usually require the installation of spark plugs approximately the next grade *colder* to compensate for the additional heat of combustion which will be produced.

Now that we have mentioned additional heat, it is important to indicate that the fins on high compression heads are not usually considered important for radiating heat, but rather for added strength and good looks! Raising the compression does not usually cause any more heating troubles than you already have. At least, we have never been able to trace heating to high compression!

Raising the compression also increases the mileage given you by your machine, but only

*(Continued on page 64)*

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## FIVE WAYS TO POWER

*(Continued from page 61)*

if you drive the car as you did previously, and not use the extra power from every light or stop sign just to show how much faster your car is now.

Clearance between the head of the valves and the spark plug electrodes is important. Spark plugs can be hammered shut after the head is milled. You can look down the spark plug holes after placing head in position with a couple of bolts. If you can see that the valves are going to be in line with the plug holes, then you'd better check carefully before installing the plugs. If you find that heavy washers are needed to properly position the plugs, these are available from HASTINGS plug dealers. Don't stack up more than two of these gaskets. To use a stack of gaskets is to invite plug trouble. Proper plug heat range depends largely on the plug transferring its heat to the head and from the head to the cooling system water. Several washers set up a heat barrier and the plug cannot get rid of its heat and giving in effect, a hotter plug.

If you find that you have to use additional washers, then make up solid brass or copper washers on a lathe. After installing them, check the threads in the combustion chamber. If some are exposed, they should be rounded or ground out entirely to eliminate these hot spots. Careful attention to combustion chamber smoothness always pays off in a smoother running and more efficient engine!

For your reference, we have included a few approximate compression ratios which will be attained by milling your cylinder heads. This is the first step in hopping your engine, so go to it!

*Continued next month — step 2*
*"Adding carburetion to your engine"*

| CAR (year and model) | Stock Compression | Mill | Milled Ratio (Approx.) |
|---|---|---|---|
| **CHEVROLETS** | | | |
| 1941-52 Std. 216" | | .0625 | 6.5 |
| 1941-52 HiTorque 235" | | .0625 | 7.4 |
| 1941-52 Std. 216" | | .125 | 7.25 |
| 1941-52 HiTorque 235" | | .125 | 7.75 |
| 1937-40 (flat top pistons installed) | | .125 | 7.15 |
| 1937-40 (flat top pistons installed) | | .187 | 7.8 |
| **FORD V-8'S** | | | |
| 1936 | 6.3 | .060 | 7.1 |
| 1937 | 6.2 | .060 | 7.0 |
| 1938-42 | 6.1 | .060 | 7.0 |
| 1946-48 | 6.7 | .055 | 7.7 |
| 1949-51 | 6.8 | .055 | 7.7 |
| 1952-53 | 7.2 | .055 | 8.0 |
| (Additional milling can be done if accompanied by doming and flycutting) | | | |
| **MERCURYS** | | | |
| 1939-42 | 6.1 | .060 | 7.0 |
| 1946-48 | 6.7 | .055 | 7.7 |
| 1949-51 | 6.8 | .055 | 7.5 |
| 1952-53 | 7.2 | .055 | 8.0 |
| **PLYMOUTHS** | | | |
| 1935-41 | 6.7 | .060 | 7.5 |
| 1942 | 6.8 | .055 | 7.5 |
| 1946-48 | 6.6 | .060 | 7.5 |
| 1949-50 | 7.0 | .030 | 7.5 |
| 1951-53 (?) | | | |

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## TECHNICAL TIPS

*(Continued from Page 65)*

*car (by this we're hoping you are referring to ground clearance). The year, make and model of the car has a great deal to do with it. The body of a car can be dropped downward until some part of the chassis comes in contact with a part of the body. With the obstruction eliminated in one way or another, the body can go farther down until something else prevents it from continuing. By eliminating this, the process can go on and on until the body is resting on the ground. Tech. Ed.*

### ILLEGAL TAILLIGHTS

I removed the taillights from their normal position on the rear fenders of my '41 Ford and put motorcycle taillights in the rear bumper. The first time I drove the car I was stopped by an officer who said the lights were illegal and made me take them off. He neglected to say why they are illegal. What is your opinion on this?

Carl Robertson — Puente, Cal.

• *There are three things that could have caused the officer to stop you regarding your taillights. These are: The lenses may have had a smaller surface area than legally allowed. The minimum in California is three square inches per lens. Secondly: If your car is lowered radically the minimum height of taillights from the ground may have been violated. Thirdly: the inner surface of each lens may not be capable of producing a reflection. Tech. Ed.*

## FIRST JET CAR

*(Continued from Page 21)*

What has become of it?

Over ten thousand dollars had been invested in the original experimental engine and its '36 Ford chassis and with this cost the bottom of the proverbial barrel had been reached as far as the investors were concerned. The nine months absence of the car had cooled the enthusiasm of those concerned and when the car was finally returned it was decided that the project should be abandoned.

At present, the chassis has been disposed of so is no longer in existence. The jet engine is in Redding, Calif., under the care of Bob Spaid – one of the original designers – who still has hopes for installing the unit in a boat.

And so when Ab Jenkins roars across the Bonneville Salt Flats in his gigantic, streamlined, jet propelled machine he will probably set a speed record of some kind but his will *not* be the first jet powered car.

## CORRESPONDENCE

*(Continued from Page 5)*

filler pipe moved inside the trunk. The engine is stock but it has dual pipes.

Some people seem to think that Meteors and Monarchs are all that we have up here but please be advised that we also have Fords and Mercs. Keep up the good work.

Lloyd Smith — Bothwell, Canada

• *Thanks for the info, Lloyd. ED.*

### NORTHERN FORD

Here is a photo of my '38 Ford coupe. It features a shaved hood and deck and the back end has been lowered four inches. It is protected front and rear by '49 Ford bumpers. Teardrop skirts and a Cardinal Red paint job complete my custom up to date.

Bennie Nelson — Seattle, Wash.

### KENTUCKY CHEVY

The hood and deck lid of my '47 Chevrolet have been filled and the taillights and license plate have been set down on the bumper. It also has '51 Ford headlight rims and foglights set in the grill. The body work was done by T. J. Hall of Pikeville, Kentucky.

The engine has hi-lift rocker arms, a McGurk manifold with two Rochester carburetors, a Mallory coil, dual points and twin Douglass pipes.

Jimmie Rogers — Lexington, Ky.

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